Open File Report OF90-2

Metallic Mines and Mineral Deposits of Manitoba

By J.D. Bamburak

Manitoba
Energy and Mines
Geological Services

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By J.D. Bamburak
Winnipeg, 1990

Energy and Mines

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Abbreviations

Ann. Rpt.	Annual Report	M.I.	Mineral Inventory
C.M.H.	Canadian Mines Handbook	M.P.S.	Mineral Policy Sector, Ottawa
C.M.J.	Canadian Mining Journal		
CIM	Canadian Institute of Mining, Metallurgy and Petroleum	MB	Manitoba
		Mng	Mining
		P.&D.	Prospectors and Developers Association
Can.	Canadian		
Con.	Consolidated	SMF	Statement of Material Facts
Dept.	Department		
GCNL	George Cross Newsletter	VSE	Vancouver Stock Exchange
HBMS	Hudson Bay Mining and Smelting Co., Limited		

Metric Conversion

1 metre (m)	=	3.28 feet
1 kilometre (km)	=	0.62 mile
1 gram (g)	=	0.03 troy ounce
1 kilogram (kg)	=	32.15 troy ounces
	=	2.20 avoirdupois pounds
1 tonne (t)	=	1.10 tons (short)
1 hectare (ha)	=	2.47 acres
1 gram/tonne (g/t)	=	0.02917 troy ounce/ton (short)

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MAP

Geological Highway Map (M.D.A. Special Publication No.1) .....(in pocket)

INTRODUCTION

The purpose of this report is to assist prospectors and mining companies in their exploration of Manitoba by providing current documentation of known metallic mineral deposits and their development. To quote geologist/prospector Bruce Dunlop, "who has roamed the Manitoba sector of the Precambrian Shield for 40 years", "There is an old saying in mining "Where there's one mine there is more"." (Winnipeg Free Press, October 27, 1990).

A variety of sources was used to compile this report: Manitoba Energy and Mines publications and non-confidential files; Geological Survey of Canada and Mineral Policy Sector publications; company annual reports and circulars; press clippings and personal communication with prospectors and geologists.

The bulk of the information on Manitoba's metallic mines and mineral deposits, which are grouped by geological domain and depicted on corresponding location maps, is portrayed in tabular form. Statistics (where available) on size, metal grades, resources, production, holder/operator, capacity and capital cost are listed. Tonnage and grade figures have been converted to metric equivalents.

Metal Production

Mining is second only to agriculture as Manitoba's leading primary resource industry. In 1989, the value of the province's total mineral production, which includes metals, industrial minerals and fuels, hit $1.69 billion. Over the past 15 years, metal production alone has averaged 75% of Manitoba's total mineral production.

During 1989, Manitoba mines produced 34.1% of Canada's nickel, 15% of its cobalt, 7.0% of its copper, 5.5% of its zinc, 5.5% of its tantalum and 2.6% of its gold. In 1988, Canada's nickel production was second only to the U.S.S.R. in world-wide comparison.

Metal producers in Manitoba have planned to spend over $270 million during 1990 and 1991 on mine development and processing projects. Exploration companies spent an estimated $37 million, on base and precious metals projects during 1989.

Geological Setting

The province of Manitoba occupies 652 000 km^2 and is underlain entirely by rocks of Precambrian age. Three-fifths of the Precambrian rocks are exposed (or thinly covered by a veneer of glacial sediment) and form part of Canada's Precambrian Shield. The Shield is divided into the Churchill and Superior Structural Provinces; the zone of contact between the two provinces is known as the Churchill-Superior Boundary Zone. This zone, which includes the Thompson Nickel Belt, Orr Lake, Split Lake and Fox River Domains, is usually included in the Superior Province.

General Greenstone Belts

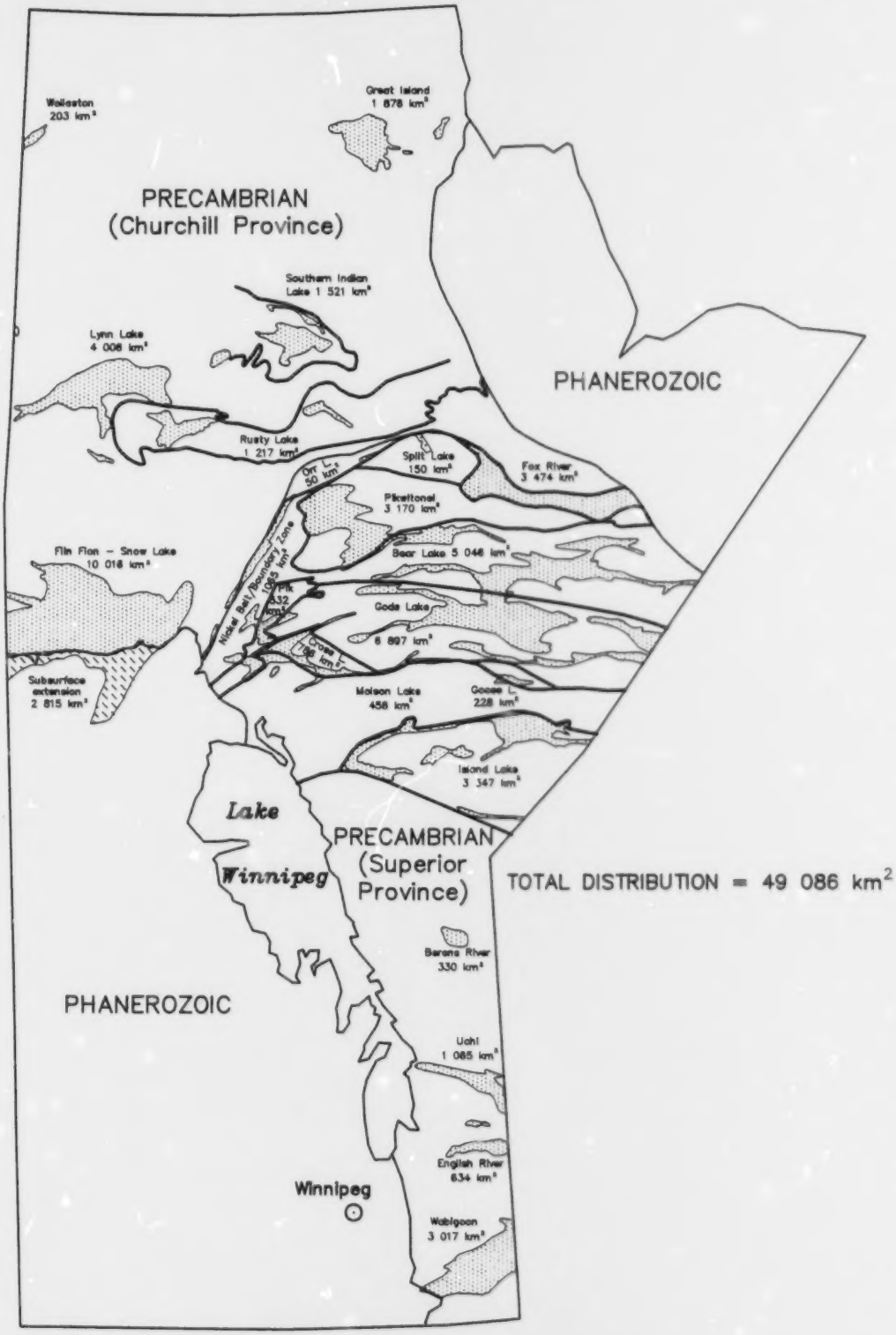

Figure 1: General greenstone belts (listed in Table 1).

Metamorphosed volcanic and volcano-sedimentary rocks (with abundant granitic intrusions), large differentiated sills and ultramafic bodies form elongated areas in the Precambrian Shield. These areas, termed "greenstone belts" are host to the majority of metallic mineral deposits, which in the broadest sense includes all mines, past and present. The greenstone belts, which have an aerial distribution of 49 086 km^2, are outlined in Figure 1. The 18 839 km^2 area of the Churchill Province greenstone belts includes some intrusive rocks but the 30 247 km^2 area of greenstones in the Superior Province does not include large areas of intrusive rock.

Table 1:
Areas of greenstone belts

CHURCHILL PROVINCE

Geological Domain	Greenstone Belt Area (km^2)*	Producers Present	Producers Past	Mineral Deposits
Wollaston	203	-	-	-
Great Island	1876	-	-	-
Southern Indian Lake	1521	-	-	-
Lynn Lake	4006	0	4	15
Rusty Lake	1217	1	0	0
Flin Flon-Snow Lake	10016	5	23	39
Sub-total	18839	6	27	54
Flin Flon-Snow Lake Ext.+	2815	2	0	2
Total	21654	8	27	56

*includes mafic to felsic volcanic, sedimentary and instrusive rocks
+subsurface extension of Flin Flon-Snow Lake greenstone belt under Phanerozoic sedimentary rocks

SUPERIOR PROVINCE

Geological Domain	Greenstone Belt Area (km^2)*	Producers Present	Producers Past	Mineral Deposits
Fox River Complex	3474	-	-	-
Split Lake	150	-	-	-
Orr Lake	50	0	0	1
Pikwitonei	3170	-	-	-
Nickel Belt	1065	2	4	9
Bear Lake	5046	-	-	-
Pik	532	-	-	-
Gods Lake	6897	0	1	5
Cross Lake	786	-	-	-
Molson Lake	456	-	-	-
Goose Lake	228	-	-	-
Island Lake	3347	0	1	2

SUPERIOR PROVINCE (cont'd)

Geological Domain	Greenstone Belt Area (km^2)*	Producers Present	Producers Past	Mineral Deposits
Berens River	330	-	-	-
Uchi	1065	0	13	9
English River	634	1	2	3
Wabigoon	3017	0	2	0
Sub-Total	30247	3	23	29
Nickel Belt Ext.+	-	0	0	1
Total	30247	3	23	30

*includes mafic to felsic volcanic and metasedimentary rocks
+subsurface extension of Thompson Nickel Belt under Phanerozoic sedimentary rocks, not determined

Two-fifths of the Precambrian basement is concealed beneath rocks formed during the Phanerozoic Eon (less than 570 million years in age), which includes the Paleozoic, Mesozoic and Cenozoic Eras (See: Geological Highway Map, in pocket). Phanerozoic sedimentary rocks form the Hudson Bay Basin and equivalent units form the base of the stratigraphic succession found in southwest Manitoba's Williston Basin. The 2815 km^2 subsurface extension of the Flin Flon-Snow Lake greenstone belt is shown separately in Figure 1 and Table 1 under the Phanerozoic sedimentary rock cover.

Metallic Mines and Mineral Deposits

The Precambrian of Manitoba is host to 147 known metallic mines and mineral deposits (Table 1). Of these, 11 are producing mines (including open pits), 50 are past producers (including suspended or dormant mines) and 86 are mineral deposits (usually with no substantial development, but with known tonnage and grade). In a few cases, deposits believed to be significant, but for which resource figures are unavailable, are included.

The metallic mines and mineral deposits, listed in Table 2, have been assigned locality numbers from south to north across Figure 2 and on the enlarged portions of this figure which constitute Figures 3 to 6. In some areas one number and symbol are used for several mines/mineral deposits. The status for each entity, which shares a locality designation, is shown in Tables 2 to 12 where presently producing mines are shown in bold face and capitalized, past producers are capitalized and mineral deposits usually have only the first letter in each word capitalized.

The framework for the remainder of the report is a tabulation of mine/mineral deposit information on a domain basis beginning, from north to south, with the Lynn Lake domain. A short overview precedes each table and reference is made to the appropriate figure for locating the deposit relative to the greenstone belt.

Figure 2

TABLE 2
Size and metal grades
of metallic mines and mineral deposits

Locality	Mine/Mineral Deposit	x000 Tonnes		% Cu	% Zn	% Ni	g/t Au	g/t Ag
1	SUNBEAM-WAVERLEY	504	PR				10.0	-
1	PENNIAC REEF	*	P				15.4	
2	DUMBARTON	1539	P	0.30		0.81		
2	MASKWA WEST	1182	PR	0.22		1.28		
2	BERNIC LAKE	3825	PR	2.75% Li_2O (spodumene)				
		3380	PR	0.13% Ta_2O_5 (tantalite)				
		317	R	23.3% Cs_2O (pollucite)				
3	BON	45	PR				8.3	-
4	GOLD PAN-GOLD SEAL	unknown	P				-	
5	GUNNAR	316	P				11.0	1.1
6	SOLO-ORO GRANDE	29	PR				10.5	-
7	OGAMA-ROCKLAND	185	PR				9.9	1.1
7	ONONDAGA	*	P				1.3	
8	CENTRAL MANITOBA	412	P	0.5			12.7	1.96
9	CRYDERMAN	unknown	P				-	
10	Ore Fault	1487	R			0.48		
11	Eagle	6458	R	0.58		0.24		
12	Mayville	270	R	-		-		
13	PACKSACK	29	PR				11.2	
13	Ranger	2	R				13.7	
13	Fox-Prime	23	R				11.9	
14	Moose	17	R				34.3	
15	Valley Vein	unknown	R				-	
16	Macketta	68	R				4.5	
17	JEEP	16	P				26.4	
18	SAN ANTONIO-FORTY-FOUR	6517	PR				8.8	-
19	LULEO	2	P				3.60	
20	Rita No. 1	3	R				25.4	
21	Sannorm	177	R				4.2	
22	Eva	16	R				6.2	
23	ISLAND LAKE	8	P				25.4	
24	Linklater Island	unknown	R	-		-		
25	High Rock Island	1800	R				10.3	
26	Little Stull	750	R				10.5	
27	GODS LAKE	491	P				10.2	1.8
28	Jowsey Island	unknown	R				-	
29	LOTUS	8	P				4.56	
29	Fox Group	unknown	R			-		
30	Hyers Island	360	R	2.56				
31	MANIBRIDGE	938	P	0.14		1.81		
32	LAGUNA	205	PR				16.04	-
33	FERRO	77	PR				13.07	-
33	Rainbow Group	unknown	R				-	
34	ROD NO. 1	23	P	5.0	4.5			
34	ROD NO. 2	645	PR	6.15	2.85			
35	STALL LAKE	6264	PR	4.33	0.48			
35	Linda McKayseff	11800	R	0.3	0.86		1.71	10.3

* = Less than 1000 tonnes produced
P = PRODUCTION
R = RESOURCES (INCLUDING RESERVES)
PR = Production and Reserves figures as of December 31, 1984
E = ESTIMATE (MINERAL DEPOSIT SERIES)

Locality	Mine/Mineral Deposit	x000 Tonnes		% Cu	% Zn	% Ni	g/t Au	g/t Ag
36	ANDERSON LAKE	3190	PR	3.45	0.1			
37	OSBORNE LAKE	3380	PR	3.03	1.48			
38	Minago	16140	R			1.28		
39	Copper-Man	221	R	2.63	4.46			
40	BALLAST-MOOSEHORN	unknown	P				-	
41	Apex	360	R				2.4	
42	McCafferty	18	R				6.8	
43	Rice Island	unknown	R	-		-	-	-
44	Resting Lake	90000	R	-		-		
45	Bucko	27000	R			0.8		
46	Discovery	4500	R			1.0		
47	Bowden	87919	R			0.627		
48	Ferguson	5	R				51.4	
49	Ram	unknown	R	-	-			
50	GURNEY	124	P				6.35	18.03
51	WESTARM	1579	PR	3.41	1.43			
52	CENTENNIAL	2366	PR	1.45	2.13			
53	WHITE LAKE	850	P	1.97	4.63			
53	CUPRUS	462	P	3.24	6.42			
54	SCHIST	1879	P	4.21	7.00			
55	MANDY	125	P	8.29	-		3.03	60.55
56	NORTH STAR	242	P	6.11				
56	DON JON	79	P	3.07				
57	FLIN FLON	62447	PR	2.18	4.13			
58	GHOST LAKE	606	PR	1.27	8.58			
58	LOST LAKE							
59	CHISEL LAKE	7300	PR	0.51	10.50			
59	Chisel Lake North	2700	R	0.17	9.0		0.4	19.0
60	DICKSTONE	1083	PR	2.4	3.4			
61	NOR-ACME	8749	PR				5.38	
61	Snow Lake	732	R				9.12	
61	Birch Zone	127	R				18.1	
62	Century	270	R				12.00	
63	Sylvia Zone	290	R	0.13	3.4		2.71	29.1
64	Farewell Lake	257	R	2.03				
65	SPRUCE POINT	1593	PR	2.35	2.18			
66	Reed Lake	1360	R					
67	Rail Lake	295	R	3.0	0.7			
68	Lucile Lake	unknown	R	-				
69	Sourdough Bay	289	R	1.46	1.71			
70	TARTAN LAKE	544	PR				7.23	
71	Baker Patton	50	RE	1 E				
71	Cabin Zone	72	RE	1 E	6.9 E			
72	Pinebay	599	R	2.9				
73	Amulet	25	RE	1.5	2.5			
74	TROUT LAKE	9338	PR	1.99	5.4		1.47	13.4
75	Vamp Lake	739	R	1.34	1.9		3.98	13.7
76	Pot Lake	102	R	1.43	4.5		3.8	18.9
77	Joannie	500	R	1.28				
78	Bomber	unknown	R	0.04	1.0		0.1	8.6
79	Squall Lake	680	R				3.4	
80	Alberts Lake	360	R					7.5

Locality	Mine/Mineral Deposit	x000 Tonnes		% Cu	% Zn	% Ni	g/t Au	g/t Ag
81	Big Island Lake	130	R	1.0	17.0		3.8	72.0
82	Honeysuckle	unknown	R				-	
83	Gold Rock	unknown	R				-	
84	Norris Lake	227	R	2.51	4.82		0.5	20.8
85	Morgan Lake	272	R	-	15.0		3.42	-
86	**NAMEW**	2484	R	0.70		2.00		
87	**CALLINAN**	2540	R	1.43	3.7		1.68	20.6
88	Copper Reef	500	R	1.5	0.5			
89	SHERRIDON	7738	P	2.37	2.00			
90	Wim	989	R	2.91			1.78	8.2
91	Nokomis Lake	136	R				7.78	
92	Jungle Lake	3356	R	1.42	1.1			
93	Bob Lake	2159	R	1.33	1.18			
94	Park Lake	unknown	R	-	-			
95	Ideal	unknown	R	-	-		-	
96	PUFFY LAKE	3500	R				7.9	
97	Fidelity	unknown	R	-	-			
98	SOAB SOUTH	unknown	PR			-		
99	SOAB NORTH	unknown	PR			-		
100	PIPE	18 000	P			-		
101	Hambone	4350	R			0.88		
102	Grass	unknown	R			-		
103	**THOMPSON**	25000	R	-		2.97		
104	**BIRCHTREE**	40 000	PR	-		-		
105	Mel Zone	unknown	R			-		
106	Mystery Lake South	225800	R			0.46		
107	Moak	45000	R			0.7		
108	Assean Lake	unknown	R				-	
109	**RUTTAN**	39985	PR	1.30	1.36			
110	MacBride Lake	1820	R	0.35	8.77	0.14	11.7	
111	FOX	14631	PR	1.72	1.91			
112	LYNN LAKE	37610	PR	0.43		0.82		
113	Lasthope	541	R				8.2	
114	"Z" Deposit	139	R	1.113	2.491		0.6	
115	FL & DH Groups	513	R	0.91	2.86			
115	Elb 138	unknown	R	-	-			
116	MACLELLAN	3794	PR				6.0	
116	Rainbow	874	R				7.5	
116	Dot	703	R				3.4	
117	Goodenough	165	R	2.63	1.21		2.1	
118	Barrington Lake	111	R	2.63				
119	Frances Lake	322	R	0.45	5.45		2.1	
120	Laurie Lake	1360	R	0.80	2.15			
121	Cartwright Lake	655	R				2.4	
122	It Group	907	R	0.04	0.81		-	26.1
123	Farley Lake	1630	R				6.40	
124	Wasekwan Lake T1A	907	R				3.1	
124	Burnt Timber	1126	R				4.5	
125	Rusty Zone	1000	R				6.0	
126	Twin Lakes	3670	R				5.89	

Sources of information: Gale, Baldwin and Koo (1980), Esposito (1986), Fogwill and Bamburak (1987), Hudson Bay Mining and Smelting Co., Limited Annual Report (1989)

Acknowledgements

Special thanks are due to Roy Eccles, formerly of Geological Services Branch, for transcribing lithologic units from the 1:1 000 000 geological map of Manitoba into the "AUTOCAD" and performing the area calculations. Roy, and later Eric Su, transcribed the locations of mineral deposits into the system and produced all the figures used in this report.

I would like to thank Dr. G.H. Gale for technical review of the manuscript.

Last of all, I would like to acknowledge Heather Wilkie in typing the manuscript.

CHURCHILL PROVINCE-GREENSTONE BELTS

Mineral occurrences have been found in all six of the domains in the Churchill Province that contain greenstone belts. However, only Lynn Lake, Rusty Lake and Flin Flon-Snow Lake domains have received sufficient exploration for discovery of mineral deposits and subsequent production (Table 1).

Lynn Lake Domain

A variety of commodities have been produced from the Lynn Lake domain (Fig. 3) since 1950 when Sherritt Gordon Mines Limited brought Manitoba's first nickel-copper mine into production (Table 3a). The Lynn Lake Mines's "A" plug was accessed by the "A" Shaft, and later by the Farley Mine shaft until 1976. The "EL" plug, 3.8 km south of the "A" shaft, was mined through the EL Mine, from both underground and open pit from 1954 to 1963. The Fox, a copper-zinc mine, was in production from 1970 to 1985. The former Agassiz Mine, now renamed the MacLellan Mine, produced gold and silver from 1986 to 1989. The latter was operated by SherrGold Inc. and later LynnGold Resources Inc. which produced from the Main Zone, East Main Zone, and the Nisku Deposit. The Nisku, east of the East Main Zone, was accessed by an exploration ramp and was connected to the Main Zone underground. The Rainbow Zone and K5 Zone, immediately west of the Main Zone, were explored from underground and surface.

Nine known copper-zinc mineral deposits are: Barrington Lake, Elb 138, FL and Dh Groups, Frances Lake, Goodenough, It Group, Laurie Lake, MacBride Lake and "Z" Deposit; and six gold deposits are: Cartwright Lake, Dot Lake, Farley Lake, Lasthope, Rainbow Zone and Wasekwan Lake (Table 3b).

Rusty Lake Domain

Since 1973, the Ruttan Mine, the only producer in the Rusty Lake Domain, (Fig. 3) has produced copper-zinc ore from open pit (until 1980) and underground (Table 4). Sherritt Gordon Mines Limited operated the mine until 1987 when Hudson Bay Mining and Smelting Co., Limited (HBMS) purchased it. Sherritt had invested about $178 million in the development of the mine which produces ore from West and East lenses.

The ore is concentrated at the mine, then trucked to Lynn Lake and finally shipped by rail to Flin Flon or Montreal for refining. In 1990, Ruttan was budgeted to supply 33% of the feed (70 000 tonnes of copper concentrate) to HBMS's copper smelter.

Recently discovered ore in the West Anomaly which is located 1 km along strike to the west of the Ruttan Mine, will extend the life of the Ruttan operation by several years. "Half of Ruttan's daily ore production of 4700 tonnes per day should come from the West Anomaly by 1993 and 75% could come from that orebody by 1996" (Canadian Mining Journal, November 1990, p.29).

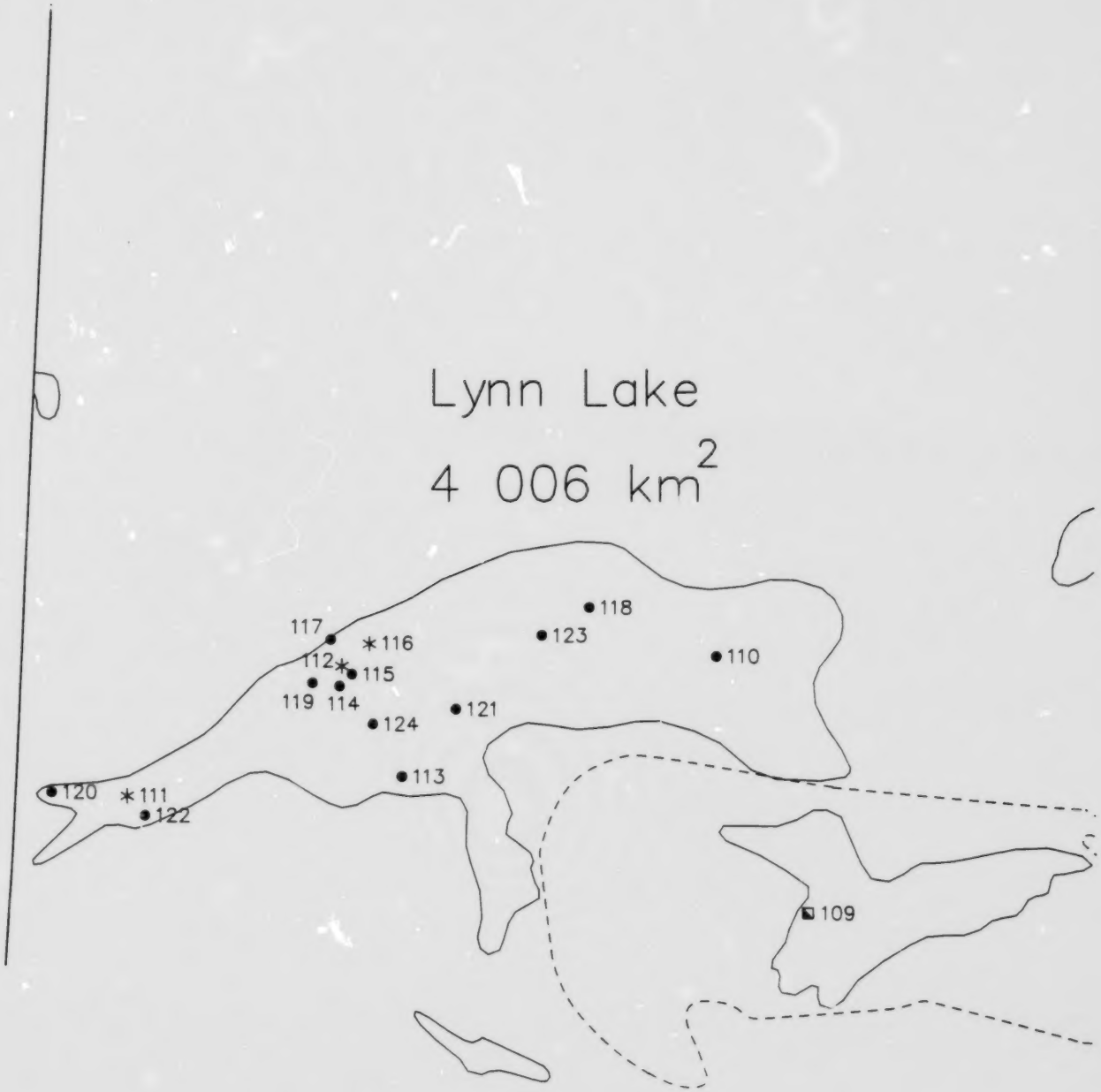

Figure 3: Outline of greenstone belts, mines and mineral deposits (listed in Tables 3a, 3b and 4) in the Lynn Lake and Rusty Lake domains.

Metallic mines and mineral deposits in the Lynn Lake and Rusty Lake domains (to accompany Figure 3)

Locality	Name	Domain	Commodity	Status	Table
109	**RUTTAN**	Rusty Lake	Cu, Zn	Present Producer	4
110	MacBride Lake	Lynn Lake	Cu, Zn	Mineral Deposit	3b
111	FOX	Lynn Lake	Cu, Zn	Past Producer	3a
112	LYNN LAKE "A PLUG"	Lynn Lake	Ni, Cu	Past Producer	3a
112	LYNN LAKE "EL PLUG"	Lynn Lake	Ni, Cu	Past Producer	3a
113	Lasthope	Lynn Lake	Au	Mineral Deposit	3b
114	"Z" Deposit	Lynn Lake	Cu, Zn	Mineral Deposit	3b
115	FL & DH Groups	Lynn Lake	Cu, Zn	Mineral Deposit	3b
115	Elb 138	Lynn Lake	Cu, Zn	Mineral Deposit	3b
116	Dot Lake	Lynn Lake	Au	Mineral Deposit	3a
116	Rainbow Zone	Lynn Lake	Au	Mineral Deposit	3a
117	MACLELLAN	Lynn Lake	Au, Ag	Past Producer	3a
117	Goodenough	Lynn Lake	Cu, Zn	Mineral Deposit	3a
118	Barrington Lake	Lynn Lake	Cu	Mineral Deposit	3b
119	Frances Lake	Lynn Lake	Cu, Zn	Mineral Deposit	3b
120	Laurie Lake	Lynn Lake	Cu, Zn	Mineral Deposit	3b
121	Cartwright Lake	Lynn Lake	Au	Mineral Deposit	3b
122	It Group	Lynn Lake	Ag	Mineral Deposit	3b
123	Farley Lake	Lynn Lake	Au	Mineral Deposit	3b
124	Wasekwan Lake T1A	Lynn Lake	Au	Mineral Deposit	3b

Table 3a

Lynn Lake domain mines

Name	Location	Holder/Operator	Capital Cost ($ million)	Capacity (tonnes/day)	Production	Resources	Employees	Source
FOX	(111) 45 km SW of Lynn Lake 64C/12NE 56° 38.08' 101° 37.33'	LynnGold Resources Inc.	1970: 27.0	2300	May/70 to Nov./85 produced 197 100 tonnes Cu, 130 400 tonnes Zn, over 3110.3 kg of Au and about 93 000 kg of Ag from 11 958 182 tonnes of ore averaging 1.82% Cu and 1.78% Zn	2.67 million tonnes averaging 1.31% Cu and 2.48% Zn	250	Northern Breeze Dec. 4, 1985 LynnGold 1988 Annual Report Olson (1987, p.1)
LYNN LAKE (includes 'A' MINE, FARLEY, and 'EL' MINE)	(112) Lynn Lake 64C/14SE 56° 51.21' 101° 02.10'	LynnGold Resources Inc.	100.0 if feasibility study positive, rehabilitiate mines, define reserves, build concentrator in three years	1800	1953-76 produced 167 million kg Ni, 95 million kg Cu, 1.7 million kg Co, 447.2 kg Au, 9022.2 kg Ag, from 20 105 000 tonnes of ore averaging 1.01% Ni and 0.53% Cu mined from "A" Plug and "EL" Plug	"A" Plug - 17.50 million tonnes to a depth of 1219 m grading 0.59% Ni, 0.32% Cu, 0.02% Co accessible by two shafts, winze and a ramp "EL" Plug - mineable ore was restricted to top 270 m of orebody	-	A.L. de Carle Sherritt Gordon Mines Limited written communications April 10, 1978 Northern Miner April 17, 1989 LynnGold 1988 Annual Report Pinsent (1980, p. 1-14)

Table 3a (continued)

Name	Location	Holder/Operator	Capital Cost ($ million)	Capacity (tonnes/day)	Production	Resources	Employees	Source
MACLELLAN (formerly Agassiz) (includes MAIN ZONE, EAST MAIN, and NISKU)	(116) 8 km NE of Lynn Lake 64C/15NW 56° 53.90' 100° 57.52'	LynnGold Resources Inc. Agassiz Resources (7% gross production royalty)	1986: 45.2 plus 1.3 to extend reserves at depth 1988: 4.0 development of Nisku	1100	Aug./86 to Apr./89 produced 3532.0 kg Au from 785 000 tonnes average grade 5.98 g/t Au	to end of 1988 proven and probable Main zone - 821 000 tonnes at 6.17 g/t Au; East main - 275 000 tonnes at 5.49 g/t Au; Nisku - 146 000 tonnes at 10.29 g/t Au; possible Main zone - 190 000 tonnes at 3.09 g/t Au; Rainbow - 874 000 tonnes at 7.54 g/t Au; Dot K5 zone - 349 000 tonnes at 5.14 g/t Au	211	C.M.H. 1987/88 Northern Miner Feb. 8, 1988 May 30, 1988 June 27, 1988 P.&D. Core Shack Mar. 5, 6, 1989 LynnGold 1988 Annual Report

Table 3b

Lynn Lake domain mineral deposits

Name	Location	Holder/Operator	Exploration Cost ($ million)	Mineralization/Resources/Development	Source
Barrington Lake	(118) 48 km ENE of Lynn Lake 64C/16NW 56° 57.75' 100° 17.75'	Hudson Bay Exploration and Development Company Limited (H.B.E.D.)	-	resources: 111 040 tonnes grading 2.63% Cu with 10% dilution	Northern Miner April 13, 1972 Esposito (1986, p. 22)
Cartwright Lake (Bonanza)	(121) 23 km SE of Lynn Lake 56° 47.22' 100° 41.57'	LynnGold Resources Inc.	-	resources: drill-inferred geological 655 000 tonnes grading 2.40 g/t Au.	SherrGold 1987 Annual Report
Dot Lake (excluding K5 Zone)	(116) 1.6 km W of MacLellan Mine 64C/15NW 56° 53.90' 100° 57.52'	LynnGold Resources Ltd. acquired Novamin Resources Inc.'s 45% interest	-	resources: geological 703 000 tonnes averaging 3.43 g/t Au in 6 zones, excluding K5 Zone of 349 000 tonnes at 5.14 g/t Au. development: planned for production.	Northern Miner Jan. 19, 1987 Thompson Nickel Belt News May 24, 1989 P.& D. Core Shack Mar. 5, 6, 1989 LynnGold 1988 Annual Report
Elb 138	(115) 5 km E of Lynn Lake 64C/15SW 56° 51.00' 100° 59.90'	LynnGold Resources Inc.	-	mineralization: information on deposit is sparce, but Milligan (1960, p. 180) indicates similarities with FL & DH Groups (115), "Z" Deposit (114) and Goodenough (117).	Milligan (1960, p. 180)

Table 3b (continued)

Name	Location	Holder/Operator	Exploration Cost ($ million)	Mineralization/Resources/Development	Source
Farley Lake	(123) 40 km E of Lynn Lake 64C/16NW 56° 54.40' 100° 26.50'	Manitoba Mineral Resources Ltd. 55.2% Mingold Resources 44.8%	1.9 (12 000 m of drilling 1987, to Dec. 31, 1986 1.9 had been spent)	resources: 1.27 million tonnes at 6.86 g/t Au in Wendy and East zone that may be amenable to open pit mining (1989). South zone is deeper and is estimated at 360 000 tonnes at 4.89 g/t Au (1987). - total open pit mining reserves in two zones outlined at 2.23 million tonnes grading 3.56 g/t Au (1988) development: 15 km road to open pit mine/mill operation under consideration. Two adjacent open pits to be developed between Gordon and Farley Lakes. Bulk sample of 10 900 tonnes of ore processed in 1989.	Lynn Lake-Northern Breeze Jan. 14, 1987 Northern Miner Jan. 16, 1989 N. Briggs Manitoba Mineral Resources Personal Communication October, 1988
FL & DH Groups (East Eldon)	(115) 5 km E of Lynn Lake 64C/14SE 64C/15SW 56° 50.0' 101° 0.5'	Granges Inc.	-	resources: 513 000 tonnes grading 0.91% Cu and 2.86% Zn, open at depth	LynnGold 1988 Annual Report
Frances Lake (Nicoba)	(119) 5 km SW of Lynn Lake 64C/14SE 56° 49.48' 101° 06.80'	Granes Inc. joint venture with Manitoba Mineral Resources Ltd. and LynnGold Resources Inc.	-	resources: 322 000 tonnes grading 0.45% Cu, 5.45% Zn and 2.09 g/t Au, open at depth	LynnGold 1988 Annual Report

Table 3b (continued)

Name	Location	Holder/Operator	Exploration Cost ($ million)	Mineralization/Resources/Development	Source
Goodenough (Sherlynn)	(117) 4 km N of Lynn Lake 64C/14NE 56° 53.70' 101° 05.45'	Sherlynn Mines Limited	-	resources: limited diamond drilling indicated 165 000 tonnes grading 2.63% Cu, 1.21% Zn and 2.06 g/t Au	Sherritt Gordon 1954 Annual Report
It Group (Snake Lake)	(122) 4 km SE of Fox Mine (111) 64C/12SE 56° 36.85' 101° 34.50'	Black Hawk Mining Inc.	-	resources: 907 000 tonnes at 0.04% Cu, 0.81% Zn, 0.48% Pb and 26.06 g/t Ag	Black Hawk 1988 Annual Report
Lasthope	(113) 27 km S of Lynn Lake 64C/10NW 56° 40.58' 100° 50.33'	Balcor Resources Corp.	0.8 (drilling 1988)	resources: North Shoot discovery current drill-proven, probable and possible 541 000 tonnes grading 8.23 g/t Au uncut over an average true width of 1.5 m which includes 95 700 tonnes grading 19.89 g/t Au to a depth of 366 m - vein structure being tested to 640 m in 1988. development: project review study completed, including preliminary financial analysis.	Northern Miner June 29, 1987 July 20, 1987 June 20, 1988 Vancouver Stockwatch Feb. 18, 1987
Laurie Lake (Lar)	(120) 13 km W of Fox Mine (111) 64C/12NW 56° 38.1' 101° 52.8'	LynnGold Resources Inc.	-	resources: geological of 1.36 million tonnes grading 0.80% Cu and 2.15% Zn, open down plunge.	LynnGold 1988 Annual Report

Table 3b (continued)

Name	Location	Holder/Operator	Exploration Cost ($ million)	Mineralization/Resources/Development	Source
MacBride Lake (Knobby Lake)	(110) 64 km E of Lynn Lake 64B/13NW 56° 53.15' 099° 55.00'	Kancana Ventures Ltd.	-	resources: 1 819 700 tonnes at 8.77% Zn, 0.35% Cu, 11.65 g/t Ag, 0.14 g/t Au including 214 200 tonnes proven at 8.29% Zn, 0.41% Cu plus 323 700 tonnes diamond drill indicated at 8.77% Zn, 0.35% Cu.	C.M.H. 1985/86, p.114 Cons. Knobby Lake Mines Limited in VSE SMF 17/86
Rainbow Zone	(116) immediately W of MacLellan Mine 64C/15NW 56° 53.90' 100° 57.52'	LynnGold Resources Inc.	? (development on 330 m and 240 m levels with diamond drilling accessed from MacLellan shaft)	resources: 539 000 tonnes 8.57 g/t Au or 874 000 tonnes at 7.54 g/t Au included in MacLellan Mine totals.	Northern Miner May 15, 1989 LynnGold 1988 Annual Report
Wasekwan Lake (TIA Zone and Burnt Timber)	(124) 16 km SE of MacLellan Mine 64C/15SW 56° 45.22' 100° 57.10'	LynnGold Resources Inc. 51% Trans America Industries Ltd. 49%	3.0 to April 1989 Capital cost $8-$10 million if production decision made	resources: TIA Zone: 0.9 million tonnes at 3.09 g/t Au; Burnt Timber: 1 million tonnes at 3.77 g/t Au, drill proven geological reserves; North Zone: 124 000 tonnes at 9.43 g/t Au drill inferred. development: pre-feasibility study concluded seasonal open pit mining operation with a stripping ratio of less than 2:1 and trucking ore 16 km to MacLellan mill is economically viable. Metallurgical tests yielded gold recovery in excess of 90%. Mill would have to be expanded by 590 tonnes/day.	SherrGold 1987 Annual Report LynnGold 1988 Annual Report Northern Miner April 3, 1989 May 15, 1989
"Z" Deposit	(114) 2.5 km SE of Lynn Lake 64C/14 SE 56° 49.75' 101° 01.50'	LynnGold Resources Inc.	-	resources: 139 000 tonnes at 1.113% Cu, 2.491% Zn, 0.55 g/t Au or 217 680 tonnes grading 1.25% Cu, 2.4% Zn	Sherritt Gordon 1949 Annual Report Baldwin (1989, p.22, 23)

Table 4

Rusty Lake domain

Name	Location	Holder/Operator	Capital Cost ($ million)	Capacity (tonnes/day)	Production	Resources	Employees	Source
RUTTAN	21 km (109) E of Leaf Rapids 648/5NE 56° 28.50' 99° 38.23'	HBMS (prior to 1988 by Sherritt Gordon Mines Limited)	1973: 80.0 1986: 28.0 shaft deepening West Anomaly 5.3 in 1990 for exploration	6700	1973 as of Dec. 31/88 31 897 947 tonnes 1.28% Cu, 1.35% Zn in 1989 63 500 tonnes of Cu concentrates 31 000 tonnes of Zn concentrates. West Anomaly will extend life by two years.	as of Dec.31/89 10 372 000 tonnes 1.35% Cu, 1.70% Zn in West and East lenses and including 3.6 million tonnes grading 1.28% Cu and 2.51% Zn, probable in West Anomaly, 660 m level being extended westward to permit detailed drilling between 600 and 850 m levels by Sept./89	425	HBMS 1989 Annual Report Northern Miner Magazine March 1989 Canadian Mining Journal Oct. 1990, p.25 Ames et al (1990, p.178) C.M.H. 1990/91, p. 469
		Province of Manitoba (50% of mine's net profit)						

Flin Flon - Snow Lake Domain

This domain contains the Flin Flon - Snow Lake greenstone belt (Fig.4) which is a major copper-zinc district. A total of 30 past and present producers are situated in the belt (Table 5a). In general, the western portion, near Flin Flon hosts copper-zinc deposits while the eastern portion, near Snow Lake hosts gold and lead-zinc deposits. The Sherridon area on the northern flank of the belt also hosts a number of important copper-zinc and gold deposits. At present, there are six producing copper-zinc mines: Callinan, Chisel Lake Open Pit, Rod No. 2, Spruce Point, Stall Lake and Trout Lake. South of the extension of the greenstone belt (Fig. 4), the Namew nickel-copper mine is in production. Although the holder of the mineral rights varies from mine to mine, HBMS is the operator of these mines.

Earliest production in the Flin Flon portion of the belt began in 1916 with the Mandy Mine which shipped 20% handpicked copper ore to Trail, B.C. The Ballast-Moosehorn Mine in the Snow Lake area produced 26 tonnes of gold-quartz ore averaging $89/t in 1917 which were also shipped to Trail. Metal production in the Flin Flon - Snow Lake belt commenced in 1918 at the Rex Mine near Herb (Wekusko) Lake which produced 43 kg of gold; and at Flin Flon in 1930 by HBMS which poured copper and zinc slabs from its "new" $25 million Flin Flon Mine. This mine became the foundation of HBMS operations for the next 60 years, and still serves as the conduit for the Callinan Mine situated a short distance to the northwest.

HBMS opened a $33 million concentrator in the Snow Lake area, near the Stall Lake Mine in 1979. The concentrator treats approximately 2200 tonnes per day of copper ore, averaging 4% copper and 0.6% zinc from Spruce Point, Stall and Rod mines in its copper circuit. A zinc circuit processes about 900 tonnes per day of zinc ore from the Chisel Open Pit, grading 8.5% Zn, 0.25% Cu and 1.3% Pb. The Nor-Acme Mine, in the Snow Lake area with over 4.9 million tonnes of ore mined from 1949 to 1958 and a milling capacity of 1800 tonnes/day was the largest gold mining operation in Manitoba. The ore averaged close to 5.83 g/t Au, but net recovery was only 3.89 g/t Au due to difficulties in treating the arsenopyrite content . Arsenical gold concentrates were stockpiled during the operation and recently studies by Sikaman Gold Resources Ltd. have indicated that with a moderate increase in the price of gold, recovery could become economic, expecially if the Nor-Acme Mine is brought into production on the basis of exploration work carried out by Inco Gold.

In the Sherridon area, Sherritt Gordon Mines Limited brought its first mine into operation in 1931. The Sherridon Mine produced copper-zinc ore which was shipped by rail to Flin Flon for processing in 1931 and 1932 and from 1937 to 1951.

From 1930 to 1986, the Flin Flon complex recovered 2.31 million tonnes of copper, 3.04 million tonnes of zinc, 171 000 kilograms of gold and 2.45 million kilograms of silver, plus substantial amounts of lead, cadmium and selenium. The bulk of this was recovered from the more than 87.2 million tonnes of ore mined in the district. In 1989 HBMS produced 75 300 tonnes of refined zinc, 57 600 tonnes of refined copper, and 3000 tonnes of nickel from company-owned mines and purchased concentrates.

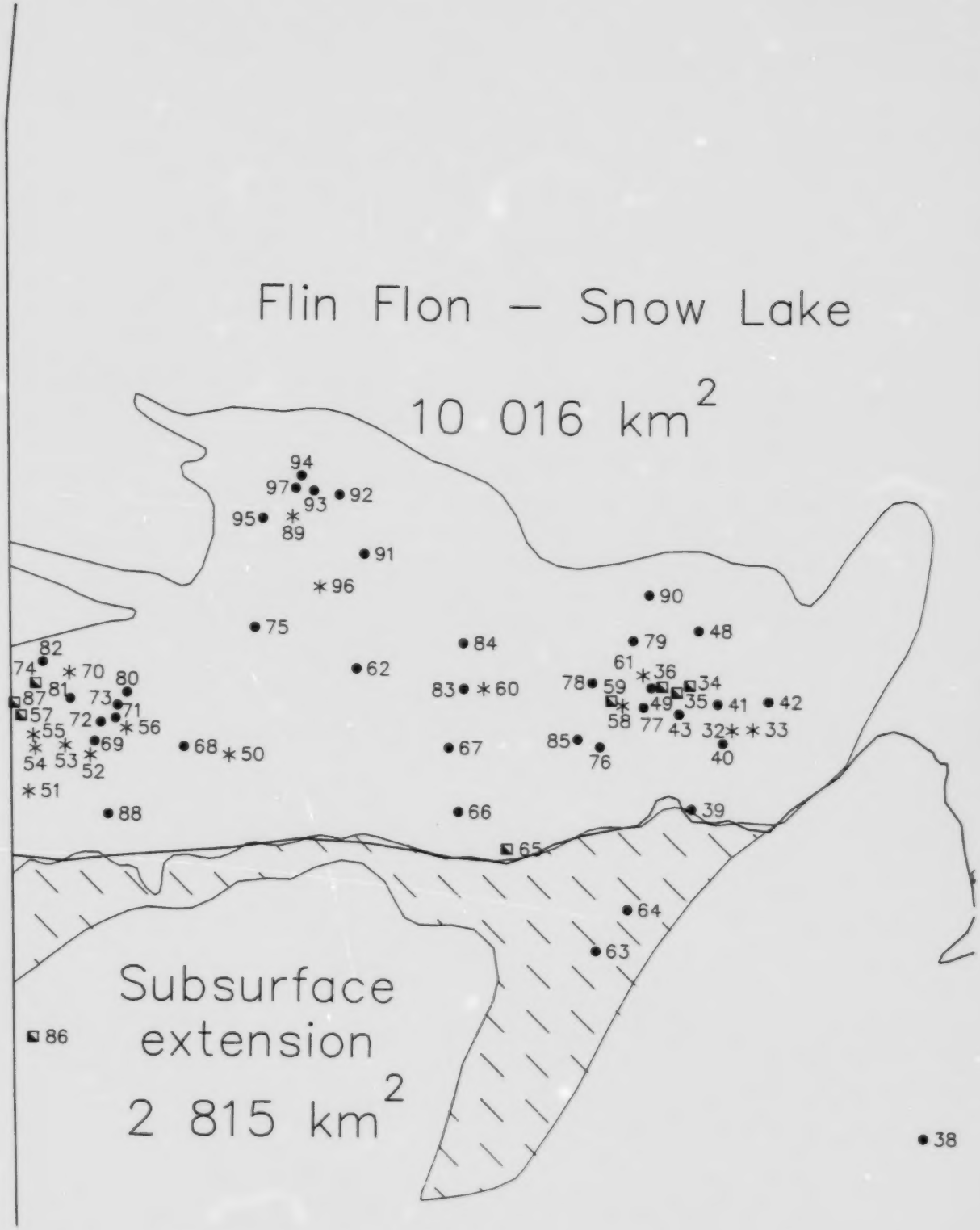

Figure 4: Outline of greenstone belt, its subsurface extension, mines and mineral deposits (listed in Tables 5a and 5b) in the Flin Flon-Snow Lake domain.

Metallic mines and mineral deposits in the Flin Flon - Snow Lake domain (to accompany Figure 4)

Locality	Name	Area	Commodity	Status	Table
32	LAGUNA	Snow Lake	Au	Past Producer	5a
33	FERRO	Snow Lake	Au	Past Producer	5a
33	Rainbow Group	Snow Lake	Au	Mineral Deposit	5b
34	ROD NO. 1	Snow Lake	Cu, Zn	Past Producer	5a
34	ROD NO. 2	Snow Lake	Cu, Zn	Present Producer	5a
35	STALL LAKE	Snow Lake	Cu, Zn	Present Producer	5a
35	Linda McKayseff	Snow Lake	Cu, Zn	Mineral Deposit	5b
36	ANDERSON LAKE	Snow Lake	Cu, Zn	Past Producer	5a
37	OSBORNE LAKE	Snow Lake	Cu, Zn	Past Producer	5a
39	Copper-Man	Snow Lake	Cu, Zn	Mineral Deposit	5b
40	BALLAST-MOOSEHORN	Snow Lake	Au	Past Producer	5a
41	Apex	Snow Lake	Au	Mineral Deposit	5b
42	McCafferty	Snow Lake	Au	Mineral Deposit	5b
43	Rice Island	Snow Lake	Ni, Cu	Mineral Deposit	5b
48	Ferguson	Snow Lake	Au	Mineral Deposit	5b
49	Ram	Snow Lake	Cu, Zn	Mineral Deposit	5b
50	GURNEY	Flin Flon	Au, Ag	Past Producer	5a
51	WESTARM	Flin Flon	Cu, Zn	Past Producer	5a
52	CENTENNIAL	Flin Flon	Cu, Zn	Past Producer	5a
53	WHITE LAKE	Flin Flon	Cu, Zn	Past Producer	5a
53	CUPRUS	Flin Flon	Cu, Zn	Past Producer	5a
54	SCHIST	Flin Flon	Cu, Zn	Past Producer	5a
55	MANDY	Flin Flon	Cu, Zn	Past Producer	5a
56	NORTH STAR	Flin Flon	Cu, Zn	Past Producer	5a
56	DON JON	Flin Flon	Cu, Zn	Past Producer	5a
57	FLIN FLON	Flin Flon	Cu, Zn	Past Producer	5a
58	GHOST LAKE	Snow Lake	Pb, Zn, Cu	Past Producer	5a
58	LOST LAKE	Snow Lake	Pb, Zn, Cu	Past Producer	5a
59	CHISEL LAKE	Snow Lake	Pb, Zn, Cu	Present Producer	5a
59	Chisel Lake North	Snow Lake	Pb, Zn, Cu	Mineral Deposit	5b
60	DICKSTONE	Snow Lake	Cu, Zn	Past Producer	5a
61	NOR-ACME	Snow Lake	Au	Past Producer	5a
61	Snow Lake	Snow Lake	Au	Mineral Deposit	5b
61	Birch Zone	Snow Lake	Au	Mineral Deposit	5b
62	Century	Central	Au	Mineral Deposit	5b
63	Sylvia Zone	Extension	Cu. Zn	Mineral Deposit	5b
64	Farewell Lake	Extension	Cu	Mineral Deposit	5b
65	SPRUCE POINT	Extension	Cu, Zn	Present Producer	5a
66	Reed Lake	Central	Cu	Mineral Deposit	5b
67	Rail Lake	Central	Cu, Zn	Mineral Deposit	5b
68	Lucile Lake	Flin Flon	Cu	Mineral Deposit	5b
69	Sourdough Bay	Flin Flon	Cu, Zn	Mineral Deposit	5b
70	TARTAN LAKE	Flin Flon	Au	Past Producer	5a
71	Baker Patton	Flin Flon	Cu	Mineral Deposit	5b
71	Cabin Zone	Flin Flon	Cu, Zn	Mineral Deposit	5b
72	Pinebay	Flin Flon	Cu	Mineral Deposit	5b
73	Amulet	Flin Flon	Cu, Zn	Mineral Deposit	5b

Locality	Name	Area	Commodity	Status	Table
74	**TROUT LAKE**	Flin Flon	Cu, Zn, Au	Present Producer	5a
75	Vamp Lake	Sherridon	Cu, Zn, Au	Mineral Deposit	5b
76	Pot Lake	Snow Lake	Cu, Zn	Mineral Deposit	5b
77	Joannie	Snow Lake	Cu	Mineral Deposit	5b
78	Bomber	Snow Lake	Cu, Zn	Mineral Deposit	5b
79	Squall Lake	Snow Lake	Au	Mineral Deposit	5b
80	Alberts Lake	Flin Flon	Ag	Mineral Deposit	5b
81	Big Island Lake	Flin Flon	Cu, Zn, Ag	Mineral Deposit	5b
82	Honeysuckle	Flin Flon	Au	Mineral Deposit	5b
83	Gold Rock	Central	Au	Mineral Deposit	5b
84	Norris Lake	Central	Cu, Zn, Au	Mineral Deposit	5b
85	Morgan Lake	Snow Lake	Pb, Zn, Au	Mineral Deposit	5b
86	**NAMEW LAKE**	Extension	Cu, Ni	Present Producer	5a
87	**CALLINAN**	Flin Flon	Cu, An, Ag	Present Producer	5a
88	Copper Reef	Flin Flon	Cu, Zn	Mineral Deposit	5b
89	SHERRIDON	Sherridon	Cu, Zn	Past Producer	5a
90	Wim	Sherridon	Cu, Au	Mineral Deposit	5b
91	Nokomis Lake	Sherridon	Au	Mineral Deposit	5b
92	Jungle Lake	Sherridon	Cu, Zn	Mineral Deposit	5b
93	Bob Lake	Sherridon	Cu, Zn	Mineral Deposit	5b
94	Park Lake	Sherridon	Cu, Zn	Mineral Deposit	5b
95	Ideal	Sherridon	Cu,Zn	Mineral Deposit	5b
96	PUFFY LAKE	Sherridon	Au	Past Producer	5a
97	Fidelity	Sherridon	Cu, Zn	Mineral Deposit	5b

Table 5a

Flin Flon - Snow Lake domain mines

Name	Location	Holder/Operator	Capital Cost ($ million)	Capacity (tonnes/day)	Production	Resources	Employees	Source
ANDERSON LAKE	(36) 3 km SE of Snow Lake 63J/13 SW 54° 51.62' 99° 59.59'	HBMS	-	630	1970-1988 to end 1984 2 193 546 tonnes 3.41% Cu, 0.1% Zn 1985-1988 unknown	as of Dec. 31/84 996 055 tonnes 3.54% Cu, 0.1%Zn mined out 1985-1988?	-	Esposito (1986, p. 12)
BALLAST-MOOSEHORN	(40) 19 km SE of Snow Lake 63J/13 SW 54° 46.07' 99° 47.20'	Peter Dunlop	-	-	1917: 3.4 kg Au 1918: 1.6 kg Au 1931: 1.1 kg Au 0.3 kg Ag	-	-	Stockwell (1937, p. 31, 32)
CALLINAN	(87) 2.5 km N of Flin Flon 63K/13SW 54° 46.21' 101° 53.00'	HBMS 100% Consolidated Callinan Flin Flon Mines Ltd. retains 5.57% net profits interest plus a 25¢ per ton royalty	1990: 18.0 (underground exploration & development) drift completed from Flin Flon Mine (57) on 515 m level	710 increasing to 1100	Apr./90 7 years of reserves	2.8 million tonnes 3.7% Zn, 1.43% Cu 1.68 g/t Au 20.57 g/t Ag	160	C.M.H. 1990/91 p. 126, 470 Winnipeg Free Press Mar. 17, 1989 Northern Miner Mar. 21, 1988 HBMS 1989 Annual Report HBMS, 1st 1/4 Report, 1990
CENTENNIAL	(52) 14 km SE of Flin Flon 63K/12 NE 54° 42.30' 101° 40.02'	HBMS	- (decline under North Arm of Athapapuskow Lake	540	1977-1983 1 012 818 tonnes 1.42% Cu, 2.31% Zn 1985-1988 unknown	as of Dec. 31/84 1 353 113 tonnes 1.48% Cu, 2.0% Zn mined out 1985-1988?	50 before shut-down	Esposito (1986, p. 13) C.M.H. 1990/91 p. 469

Table 5a (continued)

Name	Location	Holder/Operator	Capital Cost ($ million)	Capacity (tonnes/day)	Production	Resources	Employees	Source
CHISEL LAKE	(59) 8 km SW of Snow Lake 63K/16SE 54° 50.10' 100° 06.90'	HBMS	Underground -	700	1960-1988 to end 1984 5 061 059 tonnes 0.60% Cu, 10.94% Zn 1985-1988 unknown on standby while crown pillar mined from open pit	as of Dec. 31/84 2 238 757 tonnes 0.32% Cu, 9.5% Zn partly mined 1985-1988	89	Esposito (1986, p. 12) C.M.H. 1990/91 p. 470
			Open Pit 1989: 18.0 project to develop crown pillar for production completed 2 months ahead of schedule	1000	Jan./89 3 1/2 - 5 year mine life, underground on standby while crown pillar being mined	1 million tonnes 8.5% Zn, 0.25% Cu, 1.3% Pb, 2.74 g/t Au 54.86 g/t Ag in crown pillar		Northern Miner March 20, 1989 HBMS 1989 Annual Report
CUPRUS	(53) 21 km SE of Flin Flon 63K/12 NE 54° 43.23' 101° 42.65'	HBMS (company had 79.25% interest in Cuprus Mines Limited)	-	180	1948-1954 462 002 tonnes 3.24% Cu, 6.42% Zn, 1.37 g/t Au, 28.69 g/t Ag	-	-	Esposito (1986, p. 12)
DICKSTONE	(60) 34 km WNW of Snow Lake 63K/16 SW 54° 51.30' 100° 29.40'	Falconbridge Limited	-	540	1970-1975 775 210 tonnes 2.47% Cu, 3.13% Zn	308 380 tonnes 2.36% Cu, 4.0% Zn	-	Esposito (1986, p. 13)

Table 5a (continued)

Name	Location	Holder/Operator	Capital Cost ($ million)	Capacity (tonnes/day)	Production	Resources	Employees	Source
DON JON	(56) 16 km E of Flin Flon 63K/13 SE 54° 45.90' 101° 34.70'	HBMS (company had 80% interest in Don Jon Mines Limited	- (orebody accessed from North Star mine at 183 m level)	70	1955-1957 79 313 tonnes 3.07% Cu	-	-	Esposito (1986, p. 12)
FERRO	(33) 6.5 km NW of Herb Lake settlement 63J/13SE 54° 47.80' 99° 42.07'	Pierce Mountain Resources Ltd. (earning 80% interest)	exploration drill program $2.0 beginning June, 1989 18 000 m	-	1932 16.3 kg Au 0.9 kg Ag from 1005.8 tonnes milled average grade 16.19 g/t Au limited production in other years	proven 66 000 tonnes of 13.37 g/t Au, possible 10 000 tonnes of 11.66 g/t Au	-	Northern Miner April 10, 1989
FLIN FLON	(57) Flin Flon straddles Man.-Sask. boundary 63K/13SW 54° 46.03' 101° 52.93'	HBMS	- (South Main shaft used to haul Callinan (87) ore to surface)	1100	1930-1989 to end 1984 61 069 239 tonnes 2.19% Cu 4.2% Zn 1985-1989 unknown	as of Dec. 31/84 1 377 495 tonnes 1.93% Cu, 1.0% Zn as of March 14/88 reserves at Flin Flon mine exhausted in 1990?	150	Winnipeg Free Press March 15, 1988 C.M.H. 1990/91 p.470 Esposito (1986, p. 12)
GHOST LAKE/ LOST LAKE	(58) 8 km SW of Snow Lake 63K/16 SE 54° 51.30' 100° 11.00'	HBMS	- Lost Lake orebody accessed from Ghost Lake decline	120	1972-1988 to end 1984 478 277 tonnes 1.34% Cu 8.87% Zn 1985-1988 unknown	as of Dec. 31/84 127 413 tonnes 1.02% Cu, 7.5% Zn mined out 1985-1988?	13 before shut-down	Esposito (1986, p. 13) C.M.H. 1990/91, p. 470

Table 5a (continued)

Name	Location	Holder/Operator	Capital Cost ($ million)	Capacity (tonnes/day)	Production	Resources	Employees	Source
GURNEY	(50) 20 km NE of Cranberry Portage 63K/11NE 54°43.88' 101° 11.73'	Granges Inc. (earning 60% interest) Mid-North Resources Limited (40%)	exploration program to April 17, 1989 $250 000, 1989 budget $450 000	110	1937-39 782.7 kg Ag 2226.8 kg Au from 123 505 tonnes average grade 6.34 g/t Au 18.03 g/t Ag	-	-	Mid-North, News Release, Feb. 20, 1989 Northern Miner April 17, 1989
LAGUNA (REX)	(32) 19 km SE of Snow Lake 63J/13 SW 54° 47.17' 99° 46.05'	W. Bartum Kobar	-	60	1918: 42.8 kg Au 1920-1921 10.1 kg Au 1924-1925: 9193 tonnes 171.4 kg Au 21.0 kg Ag 1936-1939: 101 130 tonnes 1643.6 kg Au 254.7 kg Ag	75 000 tonnes at 13.71 to 17.14 g/t Au, plus additional 41 000 tonnes broken at surface, unknown grade	-	Northern Miner Jan. 10, 1974 Davies et al (1962, p. 83)
MANDY	(55) 5 km SSE of Flin Flon 63K/12 NW 54° 43.60' 101° 49.90'	HBMS (early mining by Mandy Mines Limited) (later mining by Emergency Metals Limited a wholly - subsidiary of HBMS)	-	130	1916-1919 22 885 tonnes 20.18% Cu 1943-1944 102 231 tonnes 5.63% Cu 13.95% Zn	none	-	Esposito, (1986, p. 12)

Table 5a (continued)

Name	Location	Holder/Operator	Capital Cost ($ million)	Capacity (tonnes/day)	Production	Resources	Employees	Source
NAMEW LAKE	(86) 64 km S of Flin Flon 63K/4NW, 5SW 54° 12.84' 101° 46.72' under Phanerozoic sedimentary rock	HBMS 60% Outokumpu Oy 40% International Mining Development	1988: 70.0 (includes mine and concentrator) 1.2 for exploration in 1990 plus 2.5 for development and services	1900	Nov. 15/88 272 000 tonnes 1.61% Ni, 0.57% Cu to the end of 1989 4-5 year mine life	2.21 million tonnes 2.05% Ni 0.71% Cu and some precious metals	150	Northern Miner Jan. 9, 1989 Winnipeg Free Press March 1, 1989 HBMS 1989 Annual Report Canadian Mining Journal Oct. 1990 p. 25
NOR-ACME (BRITTANIA)	(61) Snow Lake 63K/16NE 54° 53.20' 100° 01.40'	High River Gold Mines Ltd.	6.5 underground exploration by Inco Gold to earn 50% interest, (2 000 ft. drifting and 50 000 ft. drilling), 25.0 (mill and related facilities) 50.0 cost to production	1800 1949-58 650 cash operating cost $250(US)/oz	1949-58 4.93 million tonnes 3.89 g/t Au above 466 m level plus arsenical gold concentrates (see below)	drill indicated 2 459 200 tonnes 5.11 g/t Au to a depth of 701 m proven, probable and possible 3 816 100 tonnes 6.51 g/t Au	-	Northern Miner March 6, 1989 April 17, 1989 Nor-Acme 1987 Annual Report Flin Flon - Reminder May 19, 1988 High River Gold Mines Ltd. 1989 Annual Report

Table 5a (continued)

Name	Location	Holder/Operator	Capital Cost ($ million)	Capacity (tonnes/day)	Production	Resources	Employees	Source
	Concentrates	Sikaman Gold Resources Ltd. High River Gold Mines Ltd. to receive 5% net smelter) return plus 10% net profit interest	12.0		small amount processed in 1987 at off-site pilot plant currently testing nitric acid oxidation (arseno) process at pilot plant production planned for 2nd 1/4 1991	stockpiled arsenical gold concentrates 272 000 tonnes 11.76 g/t Au	-	Northern Miner Mar. 6, 1989 July 30, 1990 Thompson Citizen October 3, 1990 High River Gold Mines Ltd. 1989 Annual Report
NORTH STAR	(56) 16 km E of Flin Flon 63K/13 SE 54° 45.90' 101° 34.70'	HBMS	-	160	1955-1958 241 643 tonnes 6.11% Cu	-	-	Esposito (1986, p. 12)
OSBORNE LAKE	(37) 22 km NE of Snow Lake 63J/13NE 54° 57.78' 99° 43.67'	HBMS	-	590	1968-83 2 852 007 tonnes 3.14% Cu 1.52% Zn	as of Dec. 31/84 528 054 tonnes 2.45% Cu, 1.28% Zn	-	Esposito (1986, p. 12)

Table 5a (continued)

Name	Location	Holder/Operator	Capital Cost ($ million)	Capacity (tonnes/day)	Production	Resources	Employees	Source
PUFFY LAKE	(96) 12 km SE of Sherridon 63N/2SW 55° 02.28' 100° 58.40'	Pioneer Metals Corporation Granges Inc. (20% net profit interest)	1987: 41.7 (developed by decline) (property for sale)	1000	Dec./87 to May/89 to Dec. 31/88 291 800 tonnes 2.61 g/t Au 0.86 g/t Ag	probable and possible 3.5 million tonnes 7.89 g/t Au 12-14 week update of underground geological mapping to identify optimum operating plan halted due to forest fire which damaged portion of equipment and drill core; resumed late 1989	15 (140 before shut-down)	Northern Miner Mar. 27, 1989 May 22, 1989 Thompson Citizen Mar. 23, 1989 Winnipeg Free Press Mar. 22, 1989 Canadian Mining Journal Mar.1990 C.M.H. 1990/91
ROD NO. 1 (Little Stall Lake)	(34) 7.3 km SE of Snow Lake 63J/13 SW 54° 51.38' 99° 55.12'	Stall Lake Mines Ltd.	-		1962-1964 22 675 tonnes 5.00% Cu, 4.5% Zn	-	-	Esposito (1986, p. 12)
ROD NO.2	(34) 7.3 km SE of Snow Lake 63J/13SW 54° 51.38' 99° 55.12'	HBMS lease to 1995 Stall Lake Mines Limited 50% Falconbridge Limited 50% receive 7% of net value of metal recovered by HBMS	-	450	Mar./1984 ore shipped to Snow Lake mill to end 1984 42 621 tonnes averaging 6.39% Cu, 2.2% Zn 1985-1990 unknown	as of Dec. 31/84 602 406 tonnes 6.13% Cu, 2.9% Zn as of Dec. 31/89 186 000 tonnes 6.6% Cu, 3% Zn	52	C.M.H. 90/91, p.411, 470 Northern Miner March 20, 1989 Esposito (1986, p.13)

Table 5a (continued)

Name	Location	Holder/Operator	Capital Cost ($ million)	Capacity (tonnes/day)	Production	Resources	Employees	Source
SCHIST	(54) 6 km SSE of Flin Flon 63K/12 NW 54° 43.18' 101° 49.56'	HBMS	-	180	1954-1976 1 877 813 tonnes 4.21% Cu, 7.00% Zn	none	-	Esposito (1986, p. 12)
SHERRIDON	(89) 64 km NE of Flin Flon 63N/03 NE 55° 08.27' 101° 06.42'	H.B.E.D. (previous mining by Sherritt Gordon Mines Limited)	-	1800	1931-1932 1935-1951 7 737 936 tonnes 2.37% Cu, 2.00% Zn	-	-	Esposito (1986, p. 12)
SPRUCE POINT	(65) 42 km SW of Snow Lake 63K/9SW 54° 34.55' 100° 24.75' under Phanerozoic sedimentary rock	HBMS	1980: 16.1 (shaft to 655 ft)	680	1982 to end of 1988 1 364 000 tonnes averaging 2.36% Cu, 2.8% Zn 2.0 g/t Au 25.0 g/t Ag 1989-1990 unknown	as of Dec. 31/87 567 000 tonnes 2.15% Cu 1.7% Zn 1.44 g/t Au 15.04 g/t Ag exploration drilling planned in 1989 from footwall crosscuts on the 574 m level and a hanging wall crosscut to be driven	42	C.M.H. 1987/88, p.470 Northern Miner March 20, 1989 Northern Miner Magazine March 1989 Fedikow and Lebedynski (1990, p.62)

Table 5a (continued)

Name	Location	Holder/Operator	Capital Cost ($ million)	Capacity (tonnes/day)	Production	Resources	Employees	Source
STALL LAKE	(35) 6.3 km SE of Snow Lake 63J/13SW 54° 51.34' 99° 59.50'	HBMS	-	950	1964 to end of 1984 4 158 096 tonnes averaging 4.29% Cu, 0.57% Zn to end of 1984 1985-1990 unknown	as of Dec. 31/84 2 105 683 tonnes 3.54% Cu 0.3% Zn exploration drilling planned in 1989 to test area between Stall and Rod at 590 m level. No.4 orebody confirmed to 1400 m level and No. 4 internal shaft completed in 1979	114	Esposito (1986, p. 12) C.M.H. 1990/91, p.470 Northern Miner March 20, 1989 Northern Miner Magazine March 1989
TARTAN LAKE (Killarney)	(70) 12 km NE of Flin Flon 63K/13SE 54° 51.22' 101° 43.80'	Granges Inc. Abermin Corp. received $5.5 million for its interest in the 20 claims surrounding the mine and other claims	1987: 26 plus $4 million preproduction operating cost from Mar/87 to Sept/88	400 by 1st 1/4 of 1988	May/87 to Oct./89 155.5 kg Au from 297 tonnes/day in 1987 419.9 kg Au from 305 tonnes/day in 1988 60.5 kg Au from 10 431 tonnes in Jan. 1989	as of Jan. 1/89 370 900 tonnes 7.10 g/t Au cut to 30.00 gt/ Au	40 before shut-down	Northern Miner Jun. 4, 1988 May 16, 1988 Granges Prospectus Jan. 20, 1988 Thompson Citizen Oct. 3, 1990 Granges 1988 Annual Report

Table 5a (continued)

Name	Location	Holder/Operator	Capital Cost ($ million)	Capacity (tonnes/day)	Production	Resources	Employees	Source
TROUT LAKE (Embury Lake)	(74) 4 km NE of Flin Flon 63K/13SW 54° 49.75' 101° 49.30'	Manitoba Mineral Resources Ltd. 27% Granges Inc. 29% HBMS 44%	1982: 28.0 1990: 18.0 (shaft sinking, completed to 640 m, operational 2nd quarter 1990 with direct connection to South zone by October 1990)	2700	1982 to end of 1989 4 190 608 tonnes 2.11% Cu 4.79% Zn 1.41 g/t Au 15.43 g/t Ag 7 year mine life	as of Jan. 1/91 proven 5.99 million tonnes 1.8% Cu, 5.8% Zn, 1.47 g/t Au, 11.31 g/t Ag in North and South zones to 650 m level and are open at depth. New high-grade zone of Zn-Cu-Au mineralization discovered below bottom of shaft	72	Northern Miner April 3, 1989 June 18, 1990 Nov. 12, 1990 Jan. 14, 1991 Thompson Citizen Jan. 11, 1988 Granges Prospectus Jan. 20, 1988 C.M.H. 1990/91 p.470 HBMS Underground Tour Aug. 20, 1990
WESTARM	(51) 13 km S of Flin Flon 63K/12NW 54° 38.55' 101° 50.23'	HBMS	-	680	1978-84 1 053 861 tonnes 3.34% Cu 1.25% Zn	as of Dec. 31/84 525 542 tonnes 3.54% Cu 1.8% Zn	-	Esposito (1986, p. 13)
WHITE LAKE	(53) 13 km SE of Flin Flon 63K/12 NE 54° 42.80' 101° 43.20'	HBMS	-	540	1972-1983 849 598 tonnes 1.97% Cu 4.63% Zn	-	-	Esposito (1986, p. 13)

The Flin Flon metallurgical complex has operated 24 hours a day, 365 days a year since it was commissioned in 1930 with only two interruptions. However, if it is to continue into the future, the aging Flin Flon "smelter is due for a $170 million environmental overhaul aimed at cutting its "acid-rain" emissions". To reduce its sulphur dioxide emissions by 25% and solid-particle emissions by 50% by 1994, HBMS must install in its smelter a zinc pressure leaching system and a Noranda converter. (Winnipeg Free Press, October 27, 1990).

HBMS has maintained an impressive discovery rate in the belt. From 1950 to 1977, 16 economic deposits (Tables 5a and 5b) were discovered, at an average cost of $4.6 million each, with a total tonnage of 25 million tonnes at 2.8% copper and 3.7% zinc. Nine of the 16 deposits were located by drilling on sites located by electromagnetic surveys. In 1990, HBMS's exploration program is budgeted at $8-10 million.

The Trout Lake Mine discovered, by Granges Inc., and now 44% owned by HBMS, has a new 640 m shaft, the most recent to be completed in the belt. The Trout Lake Mine provided HBMS's metallurgical complex with 22% of its copper concentrate and 41% of its zinc concentrates in 1989, and has a proven reserve of about seven years. Its excellent exploration potential at depth was recently demonstrated by three holes drilled from the mine's 560 m level which indicated three separate lenses within a high-grade zone of zinc-copper-gold mineralization (The Northern Miner, November 12, 1990) and by another zone discovered 650 m to the south with grades of 22.5% Zn, 2.06% Cu, 2.16 g/t Au and 30.51 g/t Ag over 30 m (The Northern Miner, January 14, 1991).

In April, 1984 HBMS made an unexpected discovery of a nickel-copper deposit, while exploring for copper zinc orebodies located in the Precambrian south of the extension of the Flin Flon - Snow Lake greenstone belt beneath the Phanerozoic (Fig. 4). The $70 million development of Namew Lake with an underground mine and a concentrator was a significant change in scope for HBMS from its traditional role as a copper-zinc producer. However, Pickell (1987) predicted that Namew "will be one of the richest Ni-Cu deposits in terms of gross metal value per tonne; and potentially, one of the most profitable mines held by HudBay." (p. 33, 34).

Table 5b

Flin Flon - Snow Lake Domain mineral deposits

Name	Location	Holder/Operator	Exploration Cost ($ million)	Mineralization/Resources/Development	Source
Alberts Lake	(80) 20 km E of Flin Flon 63K/13SE 54° 47.81' 101° 32.70'	Granges Inc.	1.0 to end of 1987	resources: drill indicated 360 000 tonnes grading 7.54 g/t Au development: metallurgical tests underway to increase gold recovery	Granges 1986 Annual Report Granges Prospectus Jan. 20, 1988
Amulet	(73) 15 km ENE of Flin Flon 63K/13 SE 54° 45.41' 101° 36.19'	A.L. Parres Ltd.	-	resources: 25 000 tonnes (estimated) at 1.5% Cu, 2.5% Zn	Gale and Eccles (1988, p.20-22)
Apex	(41) 13 km SE of Snow Lake 63J/13 SW 54° 49.58' 99° 48.32'	W.B. Kobar	-	resources: drill indicated 360 000 tonnes at 2.40 g/t Au	George Cross Newsletter Dec. 8, 1983
Baker Patton	(71) 15 km E of Flin Flon 63K/13 SW 54° 45.95' 101° 35.98'	Pinebay Mines Limited	-	resources: 50 000 tonnes (estimated) at 1% Cu (estimated)	Gale and Eccles (1988, p.15-19)

Table 5b (continued)

Name	Location	Holder/Operator	Exploration Cost ($ million)	Mineralization/Resources/Development	Source
Big Island Lake	(81) 8 km E of Flin Flon 63K/13SE 54° 48.25' 101° 43.75'	Minnova Inc. 100% in 50-50 joint venture with Kerr Addison Mines Limited to earn 50% interest in property held by Goldbrae Developments 30% Westfield Minerals 70%	0.5 to test down-dip extension and other zones in 1989. 5000 m drilling program planned to begin Jan. 1991	resources: estimate 130 000 tonnes averaging 17% Zn, 1% Cu, 72 g/t Ag, 3.8 g/t Au	C.M.H. 1990/91 p. 286 Northern Miner Jan. 14, 1991
Birch Zone	(61) 3 km NNW of Snow Lake 63K/16 NE 54° 54.50' 100° 01.20'	Snow Lake Mines Ltd.	-	resources: 124 000 tonnes grading 18.1 g/t Au over an average width of 1.87 m	Richardson and Ostry (1987, p. 57)
Bob Lake	(93) 5.5 km NE of Sherridon 63N/03 NE 55° 09.50' 101° 02.50'	LynnGold Resources Inc.	-	resources: 2 159 000 tonnes at 1.33% Cu, 1.18% Zn, 0.34 g/t Au, 9.28 g/t Ag	Sherritt Gordon 1942 Annual Report
Bomber	(78) 10 km W of Snow Lake 63K/16 SE 54° 51.30' 100° 11.00'	Falconbridge Limited	-	mineralization: 549 m x 1.8 m x 244 m at 0.10 g/t Au, 8.57 g/t Ag, 0.04% Cu, 1.0% Zn	Albert Koffman c 1960 MB Unpub. Info File
Cabin Zone	(71) 15 km E of Flin Flon 63K/13 SE 54° 46.10' 101° 36.20'	Pinebay Mines Limited	-	resources: estimated to contain 72 000 tonnes of 6.9% Zn and 1% Cu	Gale and Eccles (1988, p.56,57)

Table 5b (continued)

Name	Location	Holder/Operator	Exploration Cost ($ million)	Mineralization/Resources/Development	Source
Century	(62) 64 km ENE of Flin Flon 63K/15 SW 54° 52.20' 100° 52.30'	Ram Petroleums Limited	-	resources: proven and probable 270 000 tonnes at 12.00 g/t Au, open along strike and at depth	Ram Petroleum 1980 Annual Report
Chisel Lake North	(59) 3 km N of Chisel Lake 63K/16SE 54° 49.93' 100° 06.00'	HBMS	no work being done as of Mar. 20/89	resources: in excess of 2.7 million tonnes of 9.0% Zn, 0.17% Cu, 0.4% Pb, 0.4 g/t Au, and 19 g/t Ag (diluted 15%) between 610 and 760 m below surface from drill intersections development: new shaft may be necessary	Northern Miner March 20, 1989 Galley and Kitzler (1990)
Copper-Man	(39) 27 km SSE 63J/12 NW 54° 38.95' 99° 52.40'	Falconbridge Limited 60% Falcon Point Resources Limited 40%	-	resources: 221 308 tonnes at 2.63% Cu, 4.46% Zn or 'A' zone - 154 000 tonnes at 3.13% Cu, 4.71% Zn; 'B' zone - 67 300 tonnes at 1.49% Cu, 3.91% Zn also 0.24% Cd over 1.5 m lengths was found in some samples	Esposito (1986, p. 23) Copper-Man Mines Limited 1967 Report to Directors
Copper Reef (Millwater)	(88) 25 km SE of Flin Flon 63K/12 SE 54° 37.00' 101° 35.18'	Copper Reef Mines (1973) Limited	-	resources: 500 000 tonnes at 1.5% Cu, 0.5% Zn	Gale et al (1980,p.31,102)

Table 5b (continued)

Name	Location	Holder/Operator	Exploration Cost ($ million)	Mineralization/Resources/Development	Source
Farewell Lake (Kof Zone)	(64) 43 km S of Snow Lake 63K/08 NE 54° 29.10' 100° 02.75' under Phanerozoic sedimentary rock	H.B.E.D.	-	resources: 257 000 tonnes at 2.03% Cu to 190 m plus lower grade to 370 m	Manitoba Mineral 1980-81 Annual Report
Ferguson (Moss 1)	(48) 13 km NE of Snow Lake 63J/13 NW 54° 57.40' 99° 51.22'	Peter Dunlop	-	resources: 5400 tonnes at 51.43 g/t Au on the dumps	Northern Miner Mar. 29, 1951
Fidelity	(97) 4.5 km NNE of Sherridon 63N/03 NE 55° 09.82' 101° 03.57'	Open as of October 9, 1990	-	mineralization: two zones averaging about 30 m and 15 m wide with disseminated copper and lesser amounts of zinc and a parallel "A" zone traced for a strike length of 122 m and to a depth of 152 m	Northern Miner Feb. 24, 1966 Froese & Goetz (1981, p.9)
Gold Rock	(83) 35 km WSW of Snow Lake 63K/15 SE 54° 50.70' 100° 33.00'	L.K. Smith	-	mineralization: 16.7 m x 0.95 m at 14.88 g/t Au and 52 m x 0.36 m at 51.43 g/t Au	Stockwell (1935, p.48)

Table 5b (continued)

Name	Location	Holder/Operator	Exploration Cost ($ million)	Mineralization/Resources/Development	Source
Honeysuckle	(82) 11 km NNE of Flin Flon 63K/13 SW 54° 52.01' 101° 47.70'	H.B.E.D.	-	mineralization: drill indicated length of 213 m and 1.37 m wide at 12.00 g/t Au	F.H. Paine, written communication, July 11, 1945
Ideal	(95) 4.8 km W of Sherridon 63N/03 NE 55° 07.80' 101° 10.55'	W. Bruce Dunlop Limited	-	mineralization: zone traced by drilling and trenching for 457 m. Test pit at northwest end assayed 4.5% Cu and 3.29 g/t Au over 1.98 m. Drill hole at southwest end penetrated 16.7 m averaging 0.28% Cu and 2.63% Zn	Smith-Pride Mines Limited 1929 Advertisement
Joannie	(77) 6 km S of Snow Lake 63K/16 SE 54° 49.70' 100° 02.00'	H.B.E.D.	-	resources: 500 000 tonnes at 1.28% Cu	Gale et al (1980,p.31,113)
Jungle Lake	(92) 8 km NE of Sherridon 63N/02 NW 55° 09.30' 100° 58.33'	HBMS	-	resources: 3 360 000 tonnes at 1.42% Cu and 1.1% Zn	HBMS 1958 Annual Report
Linda-McKayseff	(35) 7 km SE of Snow Lake 63J/13SW 54° 50.71' 99° 55.80'	Minnova Inc. Thunderwood Resources Inc.	1.75 by Feb. 1990 by Thunderwood to earn 40% of Minnova's interest	resources: Linda 2 Zone - 11.8 million tonnes of massive pyritic sulphides averaging 0.3% Cu, 0.8% Zn, 10.29 g/t Ag and 0.86 g/t Au - note that N.M. reserve figures of Nov. 30, 1987 are in error	Northern Miner Nov. 30, 1987 Dec. 14, 1987 International Report to Shareholders June 24, 1987

Table 5b (continued)

Name	Location	Holder/Operator	Exploration Cost ($ million)	Mineralization/Resources/Development	Source
Lucile Lake	(68) 11 km N of Cranberry Portage 63K/11 NW 54° 41.70' 101° 23.10'	A.L. Parres Ltd.	-	mineralization: zone indicated by drilling 3-9 m wide with a 1.5-3 m wide core of 2-3% Cu	Northern Miner Nov. 5, 1964
McCafferty	(42) 16 km ESE of Snow Lake 63J/13SE 54° 49.93' 99° 41.00'	H.L. Thompson	-	resources: drill indicated 18 000 tonnes at 6.82 g/t Au across 1.37 m for 137 m. Resampling in 1981 gave average of 10.29 g/t Au across 1.14 m	Northern Miner Apr. 11, 1935 Mar. 12, 1981
Morgan Lake	(85) 96 km E of Flin Flon 63K/16SE 54° 45.80' 100° 12.80'	Granges Inc. (10% net profits interest to end of 1987 to vendor for first 10 years of production)	1.3	resources: drill indicated reserves 272 000 tonnes grading 15% Zn and 3.42 g/t Au across widths of 3.0 to 4.6 m	Granges Prospectus Jan. 20, 1988 Yorkton Research Group Aug. 1, 1987
Nokomis Lake	(91) 14.5 km SE of Sherridon 63N/2 SE 55° 03.63' 100° 52.78'	Dome Exploration (Canada) Limited	-	resources: 136 000 tonnes at 7.78 g/t Au	Northern Miner Oct. 18, 1984

Table 5b (continued)

Name	Location	Holder/Operator	Exploration Cost ($ million)	Mineralization/Resources/Development	Source
Norris Lake	(84) 35 km NNW of Snow Lake 63K/15NE 54° 55.50' 100° 30.38'	Granges Inc.	-	resources: drill indicated 227 000 tonnes grading 0.55 g/t Au, 20.78 g/t Ag, 2.51% Cu, 4.82% Zn over an average width of 2 m to a depth of 366 m	Bar Resources Limited FS 250/81 V.S.E.
Park Lake	(94) 7 km N of Sherridon 63N/3NE 55° 11.62' 101° 03.35'	H.B.E.D.	-	mineralization: sulphide orebody	Froese & Goetz (1981, p.4)
Pinebay	(72) 19 km E of Flin Flon 63K/13SE 54° 45.93' 101° 36.51'	Pinebay Mines Limited	-	resources: 360 000 tonnes at 3.2% Cu or 599 000 tonnes grading 2.9% Cu drill-indicated to 366 m level	HBMS Form 10-K, Oct. 31, 1982 Manitoba Mineral Resources 1982-1983 Annual Report
Pot Lake	(76) 14 km SW of Snow Lake 63K/16SE 54° 46.80' 100° 10.90'	H.B.E.D.	-	resources: 102 000 tonnes at 1.43% Cu, 4.5% Zn, 18.86 g/t Ag, 3.77 g/t Au	MB Assessment File 90238 Albert Koffman c 1960 MB Unpub. Info. File

Table 5b (continued)

Name	Location	Holder/Operator	Exploration Cost ($ million)	Mineralization/Resources/Development	Source
Rail Lake	(67) 38 km SW of Snow Lake 63K/10NE 54° 44.90' 100° 35.50'	HBMS	-	resources: 295 000 tonnes at 3.0% Cu, 0.7% Zn to 305 m	HBMS 1970 Annual Report CMH 1970/71 p.176
Rainbow Group	(33) 22 km SE of Snow Lake 63J/13SE 54° 47.96' 99° 41.51'	Daniel V. Ziehlke	-	development: in 1932, 18 tonnes of ore from a pit were treated at the Ferro mill producing 404 g of gold. The following year, 27 tonnes produced 198 g of gold	Rainbow Lease Ledger, MB Recording Office
Ram	(49) 6 km SE of Snow Lake 63J/13SW 54° 50.85' 99° 57.40'	HBMS	-	mineralization: copper-zinc deposit	Froese & Moore (1980, p.7)
Reed Lake	(66) 48 km SW of Snow Lake 63K/10NE 54° 38.22' 100° 32.93'	H.B.E.D.	-	resources: 1.36 million tonnes at 2.09% Cu (diluted 10%) to 549 m, open at depth	HBMS 1974 Annual Report

Table 5b (continued)

Name	Location	Holder/Operator	Exploration Cost ($ million)	Mineralization/Resources/Development	Source
Rice Island	(43) 9 km SE of Snow Lake 63J/13SW 54° 49.00' 100° 55.15'	Inco Limited	-	mineralization: copper-nickel deposit drilling reported to have "proved up to $15,000,000 worth of ore and indicated $16,000,000 over the property" in 1929 development: Explorated Area Lease No. 28	Northern Mail Oct. 25, 1929 Mpg. Tribune Nov. 11, 1929 Davies et al (1962, p.90, no. 36)
Snow Lake (formerly Silver Hart)	(61) just N of Snow Lake 63K/16NE 54° 53.90' 100° 02.10'	Snow Lake Mines Ltd.	18.0 (capital required to bring into production)	resources: No. 3 Zone - 508 000 tonnes at 9.57 g/t Au. Between 122 m and 335 m levels major deposit indicated larger than known reserves above 122 m level development: projected mill capacity 540 tonnes/day; employees 350	Northern Miner June 22, 1987 The Pas - Opasquia Times Sept. 23, 1987 Thompson-Nickel Belt Nov. 16, 1987
Sourdough Bay	(69) 15 km SE of Flin Flon 63K/12NE 54° 43.52' 101° 38.68'	Sourdough Bay Mines Limited	-	resources: 289 000 tonnes at 1.46% Cu and 1.71% Zn	Gale et al (1980, p.104)
Squall Lake	(79) 7 km NW of Snow Lake 63K/16NE 54° 53.90' 100° 04.80'	Solidor Resources Inc. Graham Gold Mining Corp. earning 50% interest in the property	0.25 1988, completed 50 tonne bulk sample	resources: Margaret zone - drill indicated 680 000 tonnes at 3.43 g/t Au (1985); all other zones on the property - 0.45 to 2.49 million tonnes at 6.86 g/t Au including an upper silicified zone - potential of 154 000 tonnes at 3.34 g/t Au, 90 000 tonnes unknown grade plus northern extension of 36 000 tonnes at 3.43 g/t Au; and a 15 m lower zone 401 000 tonnes drill-indicated grading 3.43 g/t Au development: potential open pit on Margaret zone	Northern Miner Nov. 29, 1984 Jan. 10, 1987 June 8, 1987 June 13, 1988 CMH 1990/91 p. 407

Table 5b (continued)

Name	Location	Holder/Operator	Exploration Cost ($ million)	Mineralization/Resources/Development	Source
Sylvia Zone (Dyce Siding)	(63) 5 km N of Dyce Siding 63K/8NE 54° 24.42' 100° 08.95' under Phanerozoic sedimentary rock	Mingold Resources Manitoba Mineral Resources Ltd. Ventex Energy is earning 100% interest in the property	1.0 by Feb. 28, 1993	resources: 0.9 million tonnes grading 2.4% Cu and 0.8% Zn, drill-indicated diluted (1980) or 794 000 tonnes at 2.3% Cu and 0.7% Zn drill indicated in two parallel-plunging zones open at depth at the 488 m level (1980) or 290 000 tonnes grading 2.71 g/t Au, 29.14 g/t Ag, 0.13% Cu and 3.4% Zn (1990)	HBMS 1980 Annual Report Northern Miner April 3, 1980 Jan. 29, 1990
Vamp Lake (Hudvam)	(75) 48 km ENE of Flin Flon 63K/14NE 54° 56.30' 101° 10.00'	Mingold Resources Golden Range Resources Ltd. AMS of Canada Inc.	5.0 (including 1.0 on 2400 m diamond drill program)	resources: 739 000 tonnes at 1.90% Zn, 1.34% Cu, 3.98 g/t Au, 13.71 g/t Ag in two zones drill proven, probable and possible; No.3 - 257 800 tonnes at 2.3% Zn, 1.15% Cu, 2.30 g/t Au (cut), 13.71 g/t Ag; No.1c - 217 300 tonnes at 2.7% Zn, 2.14% Cu, 6.86 g/t Au (cut), 19.20 g/t Ag development: 6.4 km access road under construction, 1500 m decline to No. 3 and No.1c zones on hold after spending $2.0 million for 213 m; activities were proposed to recommence April 1, 1990	Flin Flon - Reminder Sept. 14, 1987 Northern Miner Jan. 4, 1988 Jan. 25, 1988 Mar. 21, 1988 Oct. 3, 1988 C.M.H. 1990/91 p. 201, 285 Winnipeg Free Press March 10, 1990
Wim	(90) 16 km N of Snow Lake 63N/1SE 55° 01.51' 100° 02.63'	HBMS	-	resources: 989 000 tonnes delineated by diamond drilling averaging 2.91% Cu, 1.78 g/t Au, 8.23 g/t Ag and traces of Zn	HBMS 1972 Annual Report Bailes (1975, p.92)

SUPERIOR PROVINCE-GREENSTONE BELTS

Sixteen domains in the Superior Province contain greenstone belts. Seven of these are known to contain mineral deposits (Table 1).

Orr Lake Domain

This domain (Fig. 5) contains only one known mineral deposit, the Assean Lake, which has a mineralized zone with a drill indicated 15.26 g/t Au (Table 6).

Nickel Belt Domain

The Nickel Belt is the only one of the four domains, that constitute the Churchill-Superior Boundary Zone, with producing mines and mineral deposits (Fig. 5). The only production to date has been from nickel-copper deposits, and with the exception of the Manibridge Mine, all have been developed by Inco Limited.

From 1961 to 1971, Inco spent $270 million to bring Thompson, Birchtree, Pipe 1, Pipe 2, Soab North and Soab South into production (Table 7a). However, with falling nickel prices and dropping demand in the early 1970s, Inco closed all but the Thompson and Pipe Open Pit mines by 1977.

Pipe Open Pit closed in in 1984. In anticipation, the construction of the $87 million Thompson Open Pit was announced in 1981. Thompson Open Pit North was brought into production in 1986. Inco committed itself to a $108 million development program in 1986 that included mining of the Thompson 1-C orebody located between the 732 m and 975 m levels, reactivation of the Birchtree and construction of Thompson Open Pit South. In October, 1990, Inco announced a $287 million investment that includes mining of the Thompson 1-D orebody with three shafts to 1100 m and deepening of the Birchtree shaft from the 1045 m level to the 1295 m level. "This investment will also bring to more than $1 billion the amount that Inco has invested in the Thompson facilities (employing 2000 staff) over the 30 years since discovery of the orebodies." (The Northern Miner, November 5, 1990).

In addition to investing in mine development, Inco announced an increase in "its 1991 exploration expenditures to $7 million for further delineation of ore reserves" in the 126 km long Thompson nickel belt. Under this program almost 40 000 m of drilling was to be done. (The Northern Miner, November 5, 1990)

The Mel Zone has been grouped with the Nickel Belt domain deposits in Table 7b. Although it is situated in an area of paragneiss/metasediments, the Zone is hosted by rock units similar to those in the Nickel Belt.

Figure 5: Outline of greenstone belts, mines and mineral deposits (listed in Tables 6, 7a, 7b, 8a, 8b, 9a and 9b) in the northern part of the Superior Province in Manitoba.

Metallic mines and mineral deposits in the northern part of Superior Province (to accompany Figure 5)

Locality	Name	Area	Commodity	Status	Table
23	ISLAND LAKE	Island Lake	Au	Past Producer	9a
24	Linklater Island	Island Lake	Ni, Cu	Mineral Deposit	9b
25	High Rock Island	Island Lake	Au	Mineral Deposit	9b
26	Little Stull	Gods Lake	Au	Mineral Deposit	8b
27	GODS LAKE	Gods Lake	Au, Ag	Past Producer	8a
28	Jowsey Island	Gods Lake	Au	Mineral Deposit	8b
30	Hyers Island	Gods Lake	Cu	Mineral Deposit	8b
31	MANIBRIDGE	Nickel Belt	Ni, Cu	Past Producer	7a
38	Minago	Nickel Belt	Ni	Mineral Deposit	7b
44	Resting Lake	Nickel Belt	Ni, Cu	Mineral Deposit	7b
45	Bucko	Nickel Belt	Ni	Mineral Deposit	7b
46	Discovery	Nickel Belt	Ni	Mineral Deposit	7b
47	Bowden	Nickel Belt	Ni	Mineral Deposit	7b
98	SOAB SOUTH	Nickel Belt	Ni	Past Producer	7a
99	SOAB NORTH	Nickel Belt	Ni	Past Producer	7a
100	PIPE	Nickel Belt	Ni	Past Producer	7a
101	Hambone	Nickel Belt	Ni	Mineral Deposit	7b
102	Grass	Nickel Belt	Ni	Mineral Deposit	7b
103	THOMPSON	Nickel Belt	Ni, Cu	Present Producer	7a
104	BIRCHTREE	Nickel Belt	Ni, Cu	Present Producer	7a
105	Mel Zone	Nickel Belt	Ni	Mineral Deposit	7b
106	Mystery Lake South	Nickel Belt	Ni	Mineral Deposit	7b
107	Moak	Nickel Belt	Ni	Mineral Deposit	7b
108	Assean Lake	Orr Lake	Au	Mineral Deposit	6
125	Rusty Zone	Gods Lake	Au	Mineral Deposit	8b
126	Twin Lakes	Gods Lake	Au	Mineral Deposit	8b

Table 6

Orr Lake domain mineral deposits

Name	Location	Holder/Operator	Exploration Cost ($ million)	Mineralization/Resources/Development	Source
Assean Lake	(108) 100 km NE of Thompson 64A/1NW 56° 14.00' 96° 27.50'	High River Gold Mines Ltd.	-	mineralization: zone 152 m by 0.67 m averaging 15.26 g/t Au indicated by drilling	C.M.H. 1984-85 p. 277

TABLE 7a

Nickel Belt domain mines

Name	Location	Holder/Operator	Capital Cost ($ million)	Capacity (tonnes/day)	Production Commenced/Annual	Resources	Employees	Source
BIRCHTREE	(104) 5 km SW of Thompson 63P/12NW 55° 42.14' 97° 55.49'	Inco Limited	78.0 (shaft depth to be increased from 1045 m to 1295 m by mid-1992	4100 by 1997	1969-77 136 million kg Ni production resumed May 16, 1989. By 1997, 15 million kg Ni/year	contains 317 million kg Ni, 20-year supply of ore	160	Thompson Citizen March 27, 1989 May 19, 1989 Nickel Belt News February 20, 1989 Northern Miner Nov. 5, 1990
MANIBRIDGE	(31) 132 km SW of Thompson 63J/10NW 54° 42.14' 98° 50.23'	Falconbridge Limited	- (shaft completed to 434 m with seven levels)	900	June 1971-1977 937 912 tonnes 1.81% Ni, 0.14% Cu mine closed due to insufficient production of economic grade of ore.	May 1969 before production 1 278 000 tonnes (including 15% dilution) grading 2.55% Ni and 0.27% Cu to the 381 m level	-	Falconbridge 1969-1977 Annual Reports Winnipeg Free Press Nov. 18, 1976 Theyer (1980, p. 33)

Table 7a (continued)

Name	Location	Holder/Operator	Capital Cost ($ million)	Capacity (tonnes/day)	Production	Resources	Employees	Source
PIPE	(100) 35 km SW of Thompson 63-O/8NE 55° 29.80' 98° 09.44'	Inco Limited	1966: 100.0 No. 1 (three-compartment shaft completed to 544 m with levels at 91 m intervals from 91 to 457 m and loading pocket at 512 m)	900	1970-71 production to mid-1971		-	M.I. Card 63-O/8 NI3
			Open pit (dredging of silt and clay overburden began in 1967 and production began in 1969. Maximum depth of 243 m reached in 1984)	3600	1969-1984 18 million tonnes of interstitial, breccia and massive sulphide ore mined	none	1984: 80	Galley et al (1990, p.113)
			No. 2 (shaft reached 933 m with levels at 91 m intervals from 91 to 640 m with a crusher at 777 m and a loading station at 829 m)	900	only from upper part of orebody by open pit method		-	Galley et al (1990, p.113) M.I. Card 63-O/8 NI3

Table 7a (continued)

Name	Location	Holder/Operator	Capital Cost ($ million)	Capacity (tonnes/day)	Production	Resources	Employees	Source
SOAB NORTH	(99) 67.6 km SW of Thompson 63-0/1NW 55° 13.95' 98° 24.11'	Inco Limited	(shaft depth 635 m with levels at 61 m intervals)	900	1967-71 mining ceased due to several factors leading to a decrease in ore. Predicted mine life 12-15 years.	pre-production 90 000 to 0.9 million tonnes mineralized material grading up to 1.5% Ni	-	Mackenzie (1968, p. 75, 76) M.I. Card 63-0/1 NI2 M.P.S. MR 223
SOAB SOUTH	(98) 68 km SW of Thompson 63-0/1NW 55° 12.60' 98° 25.28'	Inco Limited	(shaft depth 605 m with levels at 61 m intervals between 91 and 518 m)	2700	1967-71 mining ceased due to several factors leading to a decrease in ore. Predicted mine life 12-15 years.	included in SOAB NORTH	-	M.I. Card 63-0/1 NI2

Table 7a (continued)

Name	Location	Holder/Operator	Capital Cost ($ million)	Capacity (tonnes/day)	Production	Resources	Employees	Source
THOMPSON	(103) Thompson 63P/12NW 55° 43.20' 97° 51.24'	Inco Limited	1960: 185.0	total present 5600	1960		total present 1800	
			Underground 26.9 1-C deposit - between 732 and 975 m levels near T-3 shaft)	1600 by 1995	full production from new development in 1990	1-C deposit - 4.5 million tonnes of nickel ore to be produced over 15-17 years from 183 to 726 m long orebody		Winnipeg Free Press Nov. 12, 1987 Northern Miner Nov. 16, 1987 Inco Limited Annual Report 1987
			209.0 (1-D orebody to be developed by three shafts to 1128 m level and ore hauled 4.8 km on 3600-ft. level to T-1 shaft)	3200 by 1997	late 1992 from 1-D orebody By 1997, 17 million kg Ni/year.	20-year supply of ore		Northern Miner Nov. 5, 1990
			Open Pit South 42.0 (second phase, removal of 6 million m^3 of muskeg, clay, sand and gravel to permit mining of remaining portion of crown pillar)	3000	Nov./85 ten year open pit life for first phase. Dredging to be completed by June 1990 for second phase	average grade about 2.4% Ni for North open pit. South pit estimated to contain 68 million kg of nickel		International Mining Nov. 1986 Thompson Citizen March 29, 1989 Inco Limited Form 10-K Dec. 31, 1984

Table 7b

Nickel Belt domain mineral deposits

Name	Location	Holder/Operator	Exploration Cost ($ million)	Mineralization/Resources/Development	Source
Bowden	(47) 103 km SW of Thompson 63J/15NE 54° 55.37' 98° 38.60'	Bowden Lake Nickel Mines Limited 95.3% interest held by Falconbridge Limited	-	resources: indicated 87 919 000 tonnes at 0.627% Ni to at least 300 m development: exploration shaft sunk to 91 m	Canhorn Mining prospectus Apr. 17, 1986
Bucko	(45) 111 km SW of Thompson 63J/15NE 54° 52.76' 98° 39.37'	Bowden Lake Nickel Mines Limited	-	resources: 27 million tonnes at 0.8% Ni to 610 m including an indicated 1 580 000 tonnes at 2.28% Ni to 300 m development: three compartment shaft sunk to 340 m with 300 m exploration drift driven at 300 m level	Canhorn Mining prospectus Apr. 17, 1986
Discovery	(46) 106 km SW of Thompson 63J/15NE 54° 54.15' 98° 37.27'	Bowden Lake Nickel Mines Limited	-	resources: 6000 tonnes per vertical m at 0.89% Ni plus 3000 tonnes per vertical m at 1.36% Ni in three zones to to at least 240 m or 4.5 million tonnes at 1% Ni	National Malartic prospectus Dec. 21, 1962 Northern Miner Apr.18, 1963

Table 7b (continued)

Name	Location	Holder/Operator	Exploration Cost ($ million)	Mineralization/Resources/Development	Source
Grass	(102) 66 km SW of Thompson 63-O/1NW 55° 14.30' 98° 21.13'	Inco Limited	-	mineralization: large body of low grade nickel-bearing material development: explored by extensive diamond drilling prior to August, 1953	Quinn (1956, p.10, showing 32)
Hambone-Maralgo	(101) 61 km SW of Thompson 63-O/8SW 55° 17.30' 98° 19.99'	Inco Limited	-	resources: indicated 3.27 million tonnes at 0.81% Ni to 305 m depth in No. 1 zone and 1.09 million at 1.10% Ni in North Creek zone and No. 2 zones	Northern Miner Oct. 2, 1958
Mel Zone	(105) 28 km N of Thompson 63P/13NW 55° 58.41' 97° 46.20'	Inco Limited	-	mineralization: nickel development: Explored Area Lease No. 12 in 1976.	M.P.S. MR 223
Minago	(38) 104 km N of Grand Rapids 63J/3SE 54° 05.30' 99° 11.20' under Phanerozoic sedimentary rock	Black Hawk Mining Inc. Canamax Resources Inc. 1.5% net smelter interest Granges Inc. 25%	1.0 (6-9000 m diamond drilling program begun Sept./90)	resources: preliminary, in Main, South and Northeast zones total 10.9 million tonnes averaging 1.25% Ni, with an additional 0.9 million tonnes of 1.17% Ni in other miscellaneous zones. All zones open at depth and Northeast zone open along strike. Alternative tonnage and grade - 16.14 million tonnes of 1.28% Ni to 732 m development: predicted 2700 to 3600 tonne/day operation, capital cost $80-100 million, employing 150-180 people, mine life 15-18 years	Thompson Citizen May 2, 1990 Northern Miner June 18, 1989 Aug. 27, 1990

Table 7b (continued)

Name	Location	Holder/Operator	Exploration Cost ($ million)	Mineralization/Resources/Development	Source
Moak	(107) 42 km NE of Thompson 63P/13NE 55° 56.08' 97° 34.87'	Inco Limited	-	resources: 45 million tonnes running 0.7% Ni, widths up to 90 m development: capital cost $2 million, exploration shaft reached depth of 404 m with levels at 213, 305, and 396 m. Production shaft to 695 m begun in 1957 never completed due to Thompson (103) discovery.	Northern Miner Dec. 9, 1954 M.I. Card 63P/13 NI1
Mystery Lake	(106) 5.5 km NNE of Thompson 63P/13SW 55° 49.70' 97° 45.41'	Inco Limited	1.0 from 1950-57	resources: 227 million tonnes at 0.6% Ni, 225.8 million tonnes at 0.46% Ni or 45 million tonnes at 0.5% Ni	House of Commons Debates Apr. 24, 1952 v.94,No.34, p.1561 Cove Uranium 1956 Annual Report Northern Miner Aug. 17, 1961 Northern Miner Editor 1975 Written Communication
Resting Lake	(44) 114 km SW of Thompson 63J/15SE 54° 51/70' 98° 42.62'	Falconbridge Limited	-	resources: 90 million tonnes at 0.30% Ni-Cu to 305 m. Locally large volumes of rock reported to exceed 0.40% Ni-Cu	La Ronge Mng. VSE SMF Oct. 1, 1971

South of the Nickel Belt domain shown in Figure 5, Amax Exploration Inc. discovered the Minago deposit beneath the Phanerozoic in 1970. Black Hawk Mining Inc., present holder, is conducting a drill program to confirm continuity of the mineralized zones. Metallurgical tests have produced a concentrate grading 29% Ni (at 77% recovery) that has virtually no iron sulphide minerals.

Gods Lake Domain

Production from this domain (Fig. 5) has been over 4976 kg of gold and 871 kg of silver during 1935 to 1943 from the Gods Lake Mine (Table 8a). All production came from the No. 1 shaft because exploration failed to find the continuation of the orebody across a major fault in the No. 2 shaft. Limited development, occurred at the Jowsey Island deposit (Table 8b) with a 65 m shaft and some drifting on two levels.

Currently activities in this domain have been concentrated on three gold deposits: Westmin Resources Limited's Little Stull deposit; Noranda Exploration Company, Limited's Rusty Zone deposit on Oxford Lake and its Twin Lakes deposit. The Hyers Island deposit, also held by Noranda, has a drill indicated 363 000 tonnes of 2.56% Cu.

Island Lake Domain

Over 156 kg of gold and 14 kg of silver were produced from the Island Lake domain (Fig. 5) during the two years of operation of the Island Lake Mine (Table 9a). Some development was done at the Ministik deposit, now the High Rock Island deposit (Table 9b), in 1937 but work was halted due to a lack of financing. Recently, a $6 million exploration by Bighorn Development Corp. and Wydmar Development Corporation reactivated the previous workings.

The domain's only known base metal deposit, the low grade Linklater Island copper-nickel deposit, was investigated from 1956 to 1960.

TABLE 8a

Gods Lake domain mines

Name	Location	Holder/Operator	Capital Cost ($ million)	Capacity (tonnes/day)	Production	Resources	Employees	Source
GODS LAKE	(27) 261 km SE of Thompson 53L/9NE 54° 40.20' 94° 09.08'	Twin Gold Mines Ltd. 68.6% of company held by Agassiz Resources Ltd.	- (two shafts, No.1-277 m No.2-575 m joined at 6th level)	180	1935-43 490 812 tonnes to produce 4990.5 kg Au 881.9 kg Ag all production from No. 1 shaft	-	-	M.I. Card 53L/9 AU2

Table 8b

Gods Lake domain mineral deposits

Name	Location	Holder/Operator	Exploration Cost ($ million)	Mineralization/Resources/Development	Source
Hyers Island	(30) 157 km SE of Thompson 63I/16SE 54° 45.81' 96° 01.20'	Noranda Exploration Company, Limited	-	resources: 360 000 tonnes of 2.56% Cu, drill indicated	Haskins and Stephenson (1974, p. 38)
Jowsey Island	(28) 255 km SE of Thompson 53L/9NW 54° 39.40' 94° 17.10'	W. Bruce Dunlop Limited	-	mineralization: 1-A-1 ore-sheet 34.4 m by 1.7 m at 16.11 g/t Au and 1-A-2 ore-shoot 34.7 m by 1.2 m at 6.86 g/t Au on 30 m level and on 60 m level 22.5 m by 2.0 m at 8.23 g/t Au development: two compartment shaft to 65.2 m with levels at 30 and 60 m	MB 8th Annual Report 1936, p. 83, 84 M.I. Card 53L/9 AU1

Table 8b (continued)

Name	Location	Holder/Operator	Exploration Cost ($ million)	Mineralization/Resources/Development	Source
Little Stull	(26) 350 km ESE of Thompson 53K/10SE 54° 34.28' 92° 43.70'	Westmin Resources Limited 55.33% TanQueray Resources Ltd. 35% Estaurum Mines Ltd. 11.67%	1989 - 10 000 m of diamond drilling on West Zone, 1990 - testing West Zone at depth	resources: 750 000 tonnes grading 10.5 g/t Au (uncut), geological inventory in West Zone. Four zones open along strike and at depth. Note - figures quoted in Northern Miner, Sept. 4, 1989 incorrect	Westmin 1989 Annual Report p. 14, 15
Rusty Zone	(125) 160 km SE of Thompson 53L/13SW 54° 48.81' 95° 51.71'	Noranda Exploration Company, Limited Lithium Corporation of Canada earning 50% interest in property	5.0 over 4 years 1990 - drilling west extension of Rusty shear zone over strike length of 4 km	resources: 1 million tonnes at 6.0 g/t Au, geological reserves	Northern Miner Apr. 23, 1990 MB Annual Meeting with Industry 1990, Noranda display
Twin Lakes	(126) 350 km ESE of Thompson 53K/7NW 54° 26.45' 92° 58.43'	Noranda Exploration Company, Limited Bellex Mining earning 50% interest in property	7.0 over 5 years, drilling to resume Jan./91 to explore zone along strike	resources: Twin Lakes Zone - Zone A 2 500 000 tonnes at 2.8 g/t Au, Zone B 514 000 tonnes at 15.97 g/t Au; Seeber River Zone - 33 million tonnes at 1.03 g/t Au including 650 000 tonnes at 9.87 g/t Au	MB Annual Meeting with Industry 1990, Noranda display GCNL No.209 Oct. 29, 1990

TABLE 9a

Island Lake domain mines

Name	Location	Holder/Operator	Capital Cost ($ million)	Capacity (tonnes/day)	Production Commenced/Annual	Resources	Employees	Source
ISLAND LAKE	(23) 318 km SE of Thompson 53E/16SE 53° 47.00' 94° 12.60'	W. Bruce Dunlop	-	32	1934-35 7817 tonnes 163.1 kg Au 14.3 kg Ag	none	-	M.I. Card 53E/16 AU1

Table 9b

Island Lake domain mineral deposits

Name	Location	Holder/Operator	Exploration Cost ($ million)	Mineralization/Resources/Development	Source
High Rock Island (Henderson Island, Ministik, Pluto No.1)	(25) 307 km SE of Thompson 53E/15SE 53° 45.80' 94° 30.70'	Bighorn Development Corp. 30% Wydmar Development Corporation 50%	6.0 shaft rehabilitated and pilot mill installed 1988 - 160 tonne bulk sample 1990 - 5400 tonne underground bulk sample	resources: proven and drill-indicated 450 000 tonnes at 10.29 g/t Au; inferred - 1.36 million at 10.29 g/t Au development: 70 m shaft sunk, drifting on 68 m level	C.M.H. 1990/91, p. 75, 460
Linklater Island	(24) 283 km SE of Thompson 53E/15NE 53° 56.05' 94° 45.70'	Inco Limited		mineralization: drilling from 1956 to 1960 disclosed a low grade copper-nickel ore body	Davies et al (1962, p.55)

Uchi Domain

The Uchi domain (Fig. 6) and, in particular, the Rice Lake greenstone belt has produced gold since the late 1920s with 13 past producing mines (Table 10a). One of these, San Antonio produced well over 450 000 kg of gold, making it the largest gold mine in the province in terms of gold production. In addition, nine other gold deposits (Table 10b) are also located in the Rice Lake greenstone belt, but only one base metal deposit, the nickel-bearing zone on the Fox Group. It should be noted, however, that the Central Manitoba Mine production of 414 000 tonnes of ore averaged 0.5% Cu.

Most of the production from the San Antonio Mine occurred from 1932 to 1968. It was refurbished and produced again during 1982 and 1983. Most of the ore remaining at San Antonio is approximately 1.6 km beneath the surface, below the 26th level, and its development will require sinking a new shaft or the extension of a winze.

English River Domain

The bifurcated Bird River greenstone belt (Fig. 6) hosts the producing Tanco Mine (a pegmatite deposit) and two past producing nickel-copper mines, the Dumbarton and the Maskwa West Open Pit (Table 11a). Three nickel-copper deposits, the Eagle, Mayville and Ore Fault, also occur in this greenstone belt (Table 11b).

Bernic Lake is operated by Tantalum Mining Corporation of Canada Ltd. which is 37.5% held by HBMS. The mine produces tantalum concentrate and ceramic-grade spodumene, and has produced from zones containing the world's largest reserves of cesium. Beryllium, rubidium and gallium are potential products.

The Dumbarton Mine and the Maskwa Open Pit Mine produced nickel-copper ore from 1969 to 1976 which was milled at the Faraday Mine in Werner Lake, Ontario. Known mineralization beneath the open pit is not economic at this time.

Wabigoon Domain

The first recorded precious metal discovery in Manitoba came from this domain (Fig. 6), which contains two narrow greenstone belts that form the southwesterly extensions of a greenstone belt in the Lake of the Woods area, Ontario. In 1890 the Penniac Reef was discovered near Falcon Lake, and in 1913 and 1914 several gold bars were produced from this deposit, the province's first underground mine (Table 12).

In 1936, the Sunbeam-Waverley mined 4438 tonnes of ore from the Sunbeam claim and of this 4256 tonnes of 5.82 g/t Au were shipped to Kenricia in Ontario. In 1946 a three-compartment vertical shaft was completed to 150 m, but after exploration on three levels operations were discontinued late in the year.

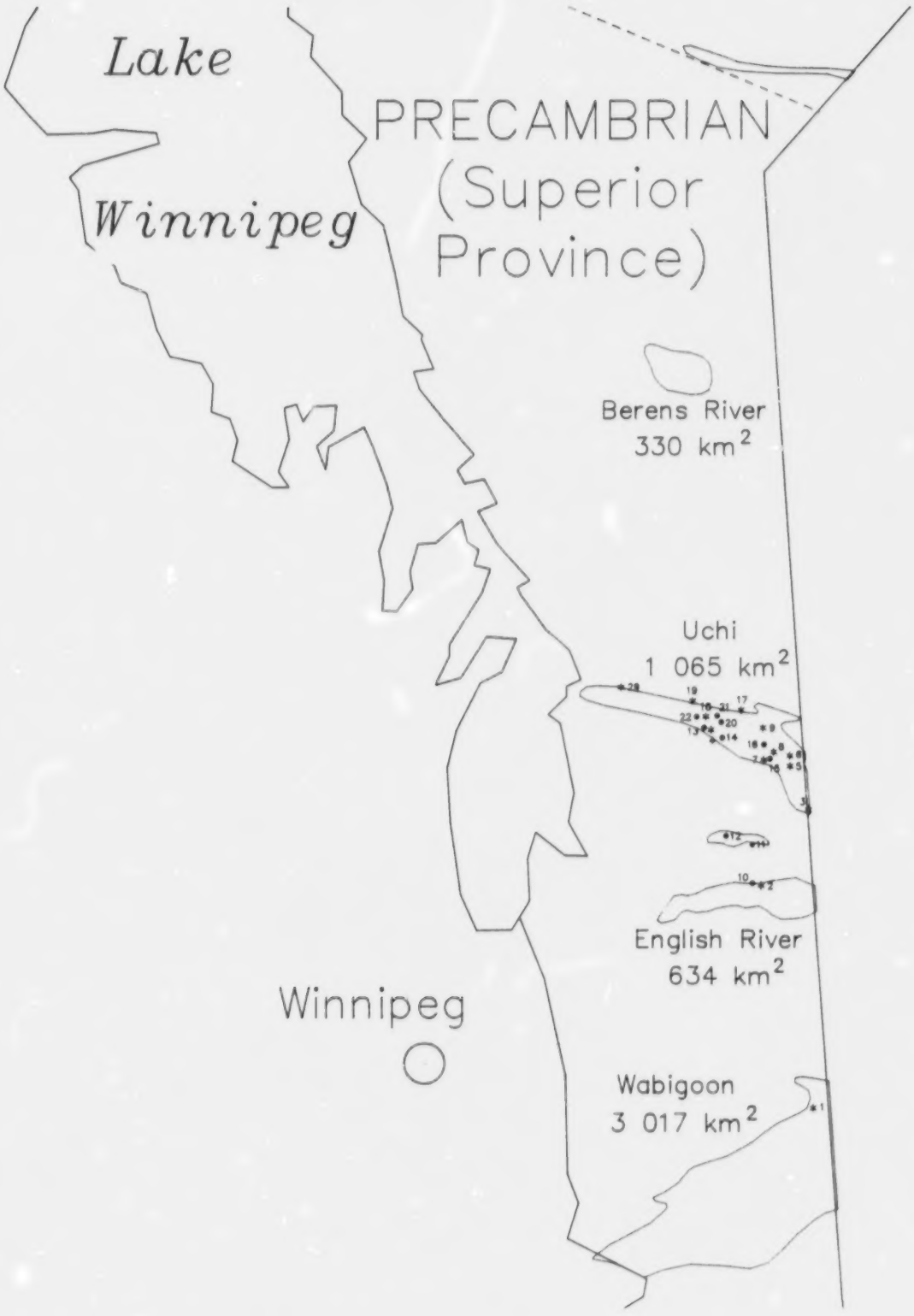

Figure 6: Outline of greenstone belts, mines and mineral deposits (listed in Tables 10a, 10b, 11a, 11b and 12) in the southern part of the Superior Province in Manitoba.

Metallic mines and mineral deposits in the southern part of Superior Province (to accompany Figure 6)

Locality	Name	Area	Commodity	Status	Table
1	SUNBEAM-WAVERLEY	Wabigoon	Au, Ag	Past Producer	12
1	PENNIAC REEF	Wabigoon	Au	Past Producer	12
2	DUMBARTON	English River	Ni, Cu	Past Producer	11a
2	MASKWA WEST	English River	Ni, Cu	Past Producer	11a
2	BERNIC LAKE	English River	Li, Ta*	Present Producer	11a
3	BON	Uchi	Au, Ag	Past Producer	10a
4	GOLD PAN-GOLD SEAL	Uchi	Au	Past Producer	10a
5	GUNNAR	Uchi	Au	Past Producer	10a
6	SOLO-ORO GRANDE	Uchi	Au, Ag	Past Producer	10a
7	OGAMA-ROCKLAND	Uchi	Au	Past Producer	10a
7	ONONDAGA	Uchi	Au	Past Producer	10a
8	CENTRAL MANITOBA	Uchi	Au, Ag	Past Producer	10a
9	CRYDERMAN	Uchi	Au	Past Producer	10a
10	Ore Fault	English River	Ni	Mineral Deposit	11b
11	Eagle	English River	Ni, Cu	Mineral Deposit	11b
12	Mayville	English River	Ni, Cu	Mineral Deposit	11b
13	PACKSACK	Uchi	Au	Past Producer	10a
13	Ranger	Uchi	Au	Mineral Deposit	10b
13	Fox-Prime	Uchi	Au	Mineral Deposit	10b
14	Moose	Uchi	Au	Mineral Deposit	10b
15	Valley Vein	Uchi	Au	Mineral Deposit	10b
16	Macketta	Uchi	Au	Mineral Deposit	10b
17	JEEP	Uchi	Au	Past Producer	10a
18	SAN ANTONIO	Uchi	Au	Past Producer	10a
19	LULEO	Uchi	Au	Past Producer	10a
20	Rita No. 1	Uchi	Au	Mineral Deposit	10b
21	Sannorm	Uchi	Au	Mineral Deposit	10b
22	Eva	Uchi	Au	Mineral Deposit	10b
29	LOTUS	Uchi	Au	Past Producer	10a
29	Fox Group	Uchi	Au	Mineral Deposit	10b

*actually Li_2O, Ta_2O_5

TABLE 10a

Uchi domain mines

Name	Location	Holder/Operator	Capital Cost ($ million)	Capacity (tonnes/day)	Production	Resources	Employees	Source
BON (DIANA-GEM)	(3) 51 km SE of Bissett 52L/11NE 50° 42.60' 95° 10.00'	Canhorn Mining Corporation	775 ft. shaft with 6 levels	45	1928-32 1934-36 1937-38 1940-41 22 680 tonnes 235.6 kg Au 13.2 kg Ag average grade 10.39 g/t Au	tailings - 27-45 000 tonnes at 4.25 g/t Au or max. 18 000 tonnes at 5.66 g/t Au	-	Western Miner Jan. 20, 1977
CENTRAL MANITOBA	(8) 27 km SE of Bissett 52L/14NW 50° 54.25' 95° 20.30'	Mid-North Resources Limited	five shafts (Kitchener, Growler, Tene, Hope and Roger)	140	1927-37 411 588 tonnes 4977.5 kg Au 809.7 kg Ag 0.5% Cu average grade 12.69 g/t Au	surface material- in 1982, 437 tonnes custom milled in Bissett, data on gold recoveries not available, but included in San Antonio production	170	M.I. Card 52L/14 AU 10 to AU 13 Theyer and Ferreira (1990, map)
CRYDERMAN	(9) 21.2 km ESE of Bissett 52L/14NW 50° 58.70' 95° 23.35'	Mid-North Resources Limited	79 m shaft with 2 levels		1931-1932 $7711.82 worth of Au or 11.6 kg Au	67.0 m by 7.6 m at 17.83 g/t Au or 79.9 m by 1.0 m at 19.20 g/t Au	-	Northern Miner July 2, 1959 MB Mines Branch Annual Report 1932-33

Table 10a (continued)

Name	Location	Holder/Operator	Capital Cost ($ million)	Capacity (tonnes/day)	Production	Resources	Employees	Source
GOLD PAN - GOLD SEAL	(4) 7.5 km SE of Bissett 52L/13NE 50° 58.33' 95° 37.11'	Peter Dunlop - Gold Pan Augusta Gold Mines Ltd. - Gold Seal	4 shafts sunk and mill built prior to 1917. 1982-small mill and flotation circuit installed	-	prior to 1917: 70 g Au 1919-24: on Gold Pan 7.49 kg Au	-	-	Theyer and Ferreira (1990, p.19)
GUNNAR	(5) 35 km SE of Bissett 52L/14SW 50° 51.37' 95° 15.31'	Homestead Resources Inc.	- two shafts	136	1936-41 tonnes mined 286 229 3155.8 kg Au 290.3 kg Ag average grade 11.02 g/t Au	tailings - 1979, 363 tonnes processed to recover 62.2 g Au	100	M.I. Card 52L/14 AU? Gunnar 1936-1942 Annual Report
JEEP	(17) 13.5 km NE of Bissett 52M/3SW 51° 02.62' 95° 29.60'	Augusta Gold Mines Ltd.	180 m shaft with 4 levels ore trucked to San Antonio Mine for milling	23	1947-50 16 318 tonnes 432.0 kg Au average grade 26.40 g/t Au	-	-	MB Mines Branch 23rd Annual Report, p.71, 72 Richardson and Ostry (1986, p.25)
LOTUS	(29) 33 km NW of Bissett 62P/1NE 51° 08.98' 96° 06.49'	Estate of W.N. Baker	decline	450	1982 8287 tonnes milled grading 4.56 g/t Au at San Antonio and included in its 1982-1983 production		-	Brinco Mining 1982 and 1983 Annual Reports Richardson and Ostry (1986, p. 26) Northern Miner May 6, 1982

Table 10a (continued)

Name	Location	Holder/Operator	Capital Cost ($ million)	Capacity (tonnes/day)	Production	Resources	Employees	Source
LULEO (POUNDMAKER, SELKIRK)	(19) 8.5 km NW of Bissett 52M/4SW 51° 05.20' 94° 45.30'	Augusta Gold Mines Ltd.	160 m shaft	-	1923-1924 12.4 kg Au 1980 15.8 tonnes previously mined material shipped to Flin Flon yielded 0.9 kg Au 1982-1983 2093 tonnes milled in Bissett averaging 3.22 g/t Au	-	-	Richardson and Ostry (1986, p.27)
OGAMA-ROCKLAND	(7) 26.6 km SE of Bissett 52L/14 NW 50° 53.00' 95° 22.88'	Mid-North Resources Limited	Ogama shaft - 314 m with 7 levels Rockland shaft - 83 m with 2 levels	140	1942 1948-51 155 862 tonnes 1497.8 kg Au 172.9 kg Ag average grade 9.61 g/t Au	No. 4 vein 30 137 tonnes potential at at 11.66 g/t Au	-	Mid-North VSE SMF 62/87 M.I. Card 52L/14 AU1
ONONDAGA	(7) 26.5 km SE of Bissett 52L/14 NW 50° 52.98' 95° 22.65'	Mid-North Resources Limited	30 m shaft with 1 level	14	1933-1934 730 tonnes 933 g Au	-	-	M.I. Card 52L/14 AU15

Table 10a (continued)

Name	Location	Holder/Operator	Capital Cost ($ million)	Capacity (tonnes/day)	Production	Resources	Employees	Source
PACKSACK (MONTCALM)	(13) 4 km SW of Bissett 52L/13NE 50° 59.66' 95° 42.49'	Augusta Gold Mines Ltd.	1936-37 2 compartment shaft sunk to 160 m 1985 - impact mill and shaker table installed but closed at end of year	-	1936-37 development ore stockpiled 1985 small amount of gold obtained	probable - 21 800 tonnes at 12.36 g/t Au and 4500 tonnes at 5.88 g/t Au to 132.5 m (1937) and 2700 tonnes on stockpile at 10.29 g/t Au (1979)	-	Packsack 1937 Annual Report Winnipeg Free Press Oct. 10, 1979 M.I. Card 52L/13 AU3 Richardson and Ostry (1986, p.11)
SAN ANTONIO AND FORTY FOUR (BISSETT)	(18) Bissett 52M/4SE 51° 01.40' 95° 40.70'	Rea Gold Corporation 19.29% of company held by Cassiar Mining Corp.	18.8 (capital required to bring into production)	300 450	1932-68 4.44 million tonnes 41519.1 kg Au 9.26 g/t Au 1982-83 474.8 kg Au 81.2 kg Ag from this and near-by deposits	mineable 1.09 million tonnes 7.61 g/t Au below 26th level and 273 000 tonnes 6.58 g/t Au above	155 if production resumes	Northern Miner Mar. 20, 1989 June 5, 1989 Brinco Mining 1982 and 83 Annual Reports Richardson and Ostry (1986, p.21)
SOLO-ORO GRANDE	(6) 34 km SE of Bissett 52L/14NE 50° 53.10' 95° 15.00'	H.M. Linnell	No. 1 shaft - 161 m with 4 levels No. 2 shaft - 55 m with 2 levels. Shafts joined at 38 m level	68	1932-34 1938-40 15 100 tonnes 165.3 kg Au 16.3 kg Ag average grade 11.31 g/t Au	estimated 29 290 tonnes at 10.29 g/t Au between 150 m level and surface (1985)	32	M.I. Card 52L/14 AU7 Northwest Prospector, Winter/85

Table 10b

Uchi domain mineral deposit

Name	Location	Holder/Operator	Exploration Cost ($ million)	Mineralization/Resources/Development	Source
Eva	(22) 6.5 km N of Bissett 52M/4SW 51° 01.10' 95° 46.20'	John S. Henrikson	-	resources: preliminary estimate of mineable reserves in area of 15 960 tonnes at 6.17 g/t Au	New Forty-Four 1981 Annual Report, p. 9
Fox-Prime	(13) 4.5 km SE of Bissett 52L/13NE 50° 59.90' 95° 40.90'	Canadian Gold Mines Ltd.	-	resources: Fox vein - probable and possible 14 030 tonnes at 6.86 g/t Au; West Fox vein - probable and possible 5 990 tonnes at 16.80 g/t Au; Prime vein - possible 3020 tonnes at 25.71 g/t Au	New Forty-Four 1981 Annual Report
Fox Group	(29) 160 km NNE of Winnipeg 62P/1NE 51° 09.30' 96° 03.60'	Estate of W.N. Baker	-	mineralization: Ni-bearing zone	M.P.S. MR 223
Macketta	(16) 25 km SE of Bissett 52L/14NW 50° 55.50' 95° 23.15'	J.C. Gibson	-	resources: 68 000 tonnes at 4.46 g/t Au development: shaft sunk to 46 m and some drifting (1939)	International Platinum 1987 Annual Report
Moose	(14) 5.5 km SE of Bissett 52L/13NE 50° 57.39' 95° 35.87'	Augusta Gold Mines Ltd.	-	resources: 16 780 tonnes at 34.29 g/t Au on 1914-16 work	Northern Miner May 10, 1934

Table 10b (continued)

Name	Location	Holder/Operator	Exploration Cost ($ million)	Mineralization/Resources/Development	Source
Ranger	(13) 4.5 km SE of Bissett 52L/13NE 50° 59.43' 95° 38.70'	Canadian Gold Mines Ltd.	-	resources: possible 1790 tonnes at 13.71 g/t Au	New Forty-Four 1981 Annual Report
Rita No. 1 (Independence)	(20) 4.2 km SE of Bissett 52M/4SE 51° 00.30' 95° 38.20'	Carl D. Huston	-	resources: 2580 tonnes at 25.37 g/t Au development: 9 m shaft	Stockwell (1938, p.62)
Sannorm	(21) 4 km E of Bissett 52M/4SE 51° 01.60' 95° 37.45'	Hugh Wynne	0.15 has been spent to April 10, 1989 on 1308 m (12 holes) of diamond drilling	resources: drill indicated geological reserves 177 460 tonnes at 4.18 g/t Au, including 106 000 tonnes at 5.42 g/t Au to a depth of 150 m development: possible open pit.	Bakra Resources News Release March 13, 1989 Northern Miner April 10, 1989
Valley Vein	(15) 26 km SE of Bissett 52L/14NW 50° 53.30' 95° 22.55'	Mid-North Resources Limited	-	resources: grade good but considerable dilution of material because vein width varies from 0.3 to 0.6 m development: Kiwago shaft reached 82 m with levels at 38 and 76 m; Valley Vein shaft sunk to 10.7 m; less than 1 km to north Elora vein produced from trench 3.2 kg Au from 113 tonnes milled	M.I. Card 52L/14 AU16, AU6

TABLE 11a

English River domain mines

Name	Location	Holder/Operator	Capital Cost ($ million)	Capacity (tonnes/day)	Production	Resources	Employees	Source
BERNIC LAKE (TANCO)	(2) 123 km NE of Winnipeg 52L/6NW 50° 25.71' 95° 27.15'	Tantalum Mining Corporation of Canada Ltd. HBMS 37.5% Cabot Corp. 37.5% Province of Manitoba 25%	4.7 (refurbish mine and mill, complete spodumene mill, upgrade power and water services completed late 1988) (6.4 extension to concentrator, completed in 1986)	230 for Li_2O 1.1 million kg of spodumene concentrate in 1987 630 for Ta_2O_5	1986 to end of 1989 215 866 tonnes mined averaging 3.11% Li_2O to produce 15 000 tonnes of ceramic-grade spodumene concentrate per year 1969 to 1982 1 851 770 tonnes mined 0.148% Ta_2O_5 1988 to 1992 resumption of 108 700 kg tantalum concentrates per year	as of Jan. 1/90 3 608 884 tonnes 2.73% Li_2O 1 317 466 tonnes 0.103% Ta_2O_5 317 485 tonnes 23.3% Cs_2O plus "sizeable reserves" of Rb and Ga	105	HBMS 1989 Annual Report Winnipeg Free Press Feb. 22, 1989 Fedikow and Dunn (1990, p.100)
DUMBARTON	(2) 137 km NE of Winnipeg 52L/6NW 50° 28.15' 95° 26.74'	Falconbridge Limited	1969 2.4 603 m decline to depth of 152 m	730	1969-74 1 539 290 tonnes grading 0.81% Ni 0.30 Cu	none	1969 28	Karup-Moller and Brummer (1971, p.143) Fogwill and Bamburak (1987, p.25)
MASKWA WEST OPEN PIT	(2) 0.8 km SW of Dumbarton 52L/6NW 50° 27.90' 95° 27.35'	Falconbridge Limited	-	-	1975-76 365 730 tonnes at 1.16% Ni, 0.20% Cu	816 000 tonnes under open pit 1.34% Ni, 0.23%Cu	-	Northern Miner July 15, 1976 Canadian Mineralogist Vol.17, p.309,310

Table 11b

English River domain mineral deposits

Name	Location	Holder/Operator	Exploration Cost ($ million)	Mineralization/Resources/Development	Source
Eagle (Cat Lake, New Manitoba)	(11) 143 km NE of Winnipeg 52L/11SW 50° 36.20' 95° 28.90'	173714 Canada Inc.	-	resources: 585 700 tonnes at 0.58% Cu, 0.24% Ni development: shaft to 193 m, 4 levels, concentrator 85% complete in 1957 when operations suspended due to decrease in world Ni prices	Fundy Chemical et al Merger Brochure Jan. 29, 1973
Mayville	(12) 136 km NE of Winnipeg 52L/12NE 50° 38.08' 95° 36.75'	Maskwa Nickel Chrome Mines Limited	-	resources: indicated 270 000 tonnes at +2% Cu/Ni plus Au and Ag values	Winnipeg Free Press Nov. 23, 1935
Ore Fault	(10) 135 km NE of Winnipeg 52L/05NE 50° 28.60' 95° 30.50'	2411181 Manitoba Ltd.	-	resources: 1 487 000 tonnes at 0.48% Ni, some Cu to 122 m	Bird River 1972 Prospectus

Table 12

Wabigoon domain mines

Name	Location	Holder/Operator	Capital Cost ($ million)	Capacity (tonnes/day)	Production	Resources	Employees	Source
SUNBEAM AND WAVERLEY	(1) 3 km SW of West Hawk Lake 52E/11NW 49° 43.95' 95° 15.20'	Whiteshell Ventures Ltd.	5.0 Sunbeam inclined shaft (62°) to 136 m with 4 levels Waverley 152 m shaft with 3 levels	-	1936 4438 tonnes mined 1940 4257 tonnes shipped to mill at Kenricia, produced 24.7 kg Au 5.7 kg Ag average grade 5.83 g/t Au	indicated 499 400 tonnes at 10.05 g/t Au (undiluted) (1946) or developed 99 800 tonnes at 8.78 g/t Au (1980) or Sunbeam - 120 200 tonnes at 8.57 g/t Au proven (1987)	1937 24	Northern Miner Feb. 20, 1975 Stewart (1980, p.5) Northern Miner Oct. 5, 1987 M.I. Card 52E/11 Au2
PENNIAC REEF (MOORE)	(1) 3 km SW of West Hawk Lake 52E/11NW 49° 44.40' 95° 15.80'	Whiteshell Ventures Ltd.	26 m shaft with 1 level, open cut 30 m by 15 m by 3 m in depth	9	1913 63 tonnes at 17.14 g/t Au to produce gold bar 1914 270 tonnes at 15.43 g/t Au to produce gold bars valued at $1500 (2.3 kg) and 4.5 tonnes of concentrates at $222/tonne.	-		Star Lake Gold Mines Limited 1915 Prospectus

CONCLUSIONS

In keeping with the principles of sustainable development, mining, and in particular, metallic mineral production has been, is and will continue to be an important contributor to the economy of the Province. Important facts to note are:

1. The 147 known metallic mines and mineral deposits are located almost exclusively within the 52 000 km^2 of greenstone belts. This is less than 8% of the province's surface area and exploration companies spent approximately $37 million in this area in 1989.

2. Over 90% of the province's metallic mineral production (total value of $11.4 billion in current dollars to the end of 1988) has been from 6 domains, that contain less than 21 000 km^2 of greenstone belt. From 1900 to 1990, the total area involved in actual production of metallic minerals (60 producers) has been about 50 km^2 or 0.008% of the area of the province.

3. The 11 present producers that had a total production value of about $1.25 billion in 1989, occupy less than 5% of the total area of the City of Winnipeg.

4. From 1980 to 1990, 14 metallic mines were brought into production at a capital cost of over $500 million. Future plans call for company expenditures in excess of $1 billion: 1) to upgrade operations such as HBMS's metallurgical complex; 2) to access additional orebodies such as at Inco's Thompson and Birchtree mines; 3) to reactivate former producers such as Nor-Acme, San Antonio and Lynn Lake; 4) to develop new mines such as the Chisel North deposit; 5) to reprocess concentrates such as Sikaman's Snow Lake gold project; and 6) to develop new thrusts (beyond the scope of this report) such as production of silicon metal from Phanerozoic sedimentary rocks.

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APPENDIX
CHRONOLOGICAL TABLE OF METALLIC MINERAL DEVELOPMENT IN MANITOBA*

DATE	EVENT	SOURCE
1610-	Henry Hudson entered Hudson Bay.	Precambrian 30/07, p.2
1612-	Sir Thomas Button entered Nelson River.	De Lury and Cole (1930)
1619-	Jans Munck discovered Churchill River.	De Lury and Cole (1930)
1670-	Ceding of country to Prince Rupert and Hudson's Bay company, by Charles II.	De Lury and Cole (1930)
1739/04/07	La Verendrye's youngest son, Louis-Joseph sent to look at "mine" at Red Cliff on south shore of Black Island.	Northern Miner 89/05/22
1754-	Hendry reached Saskatchewan River from Hudson Bay.	De Lury and Cole (1930)
1811-	Lord Selkirk acquired 300 000 km^2 of North America, including Manitoba.	Precambrian 30/07, p.7
1812-	Edwards refers to magnetite at Narrows of Knee Lake.	De Lury and Cole (1930)
1821-	Hudson's Bay company amalgamates with its rival, the North West company.	De Lury and Cole (1930)
1843-	Geological Survey of Canada instituted under Sir Wm. Edmund Logan.	Deir (1957)
1869-	Hudson's Bay company lands (Rupert's Land), transferred to Dominion of Canada.	De Lury and Cole (1930)

*Prominent events and turning points in the history of the province, with special reference to development of metallic minerals.

1870-	Northwest Rebellion.	De Lury and Cole (1930)
1870/07/15	Province of Manitoba, area 33 700 km^2, enters confederation.	Precambrian 30/07, p.10
1877-	Geological Survey of Canada recognized by Act of Parliament.	Deir (1957)
1881-1889-	Boundaries of Manitoba extended.	De Lury and Cole (1930)
1885-	Dock built at Red Cliff and 5.4 tonnes of hematite shipped by sailboat to Winnipeg and by rail to Chicago where a car wheel was cast.	Northern Miner 89/05/22
1890-	Falcon Lake gold discovery (Penniac Reef Property).	M.I. 52E/11 AU4
1896/11/17	Earliest preserved recorded staking in Manitoba - Claim No. 55 by George C. Mills in Bird River area near the present site of Dumbarton Mine.	Miscellaneous(73/12/31)
1896-	Iron ore bounties inaugurated.	Deir (1957)
1907-	Federal Department of Mines created under a Minister of Mines.	Deir (1957)
1911-	Rice Lake gold discovery (Gabrielle Property).	De Lury and Cole (1930)
1912-	Northern Manitoba added to the Province.	De Lury and Cole (1930)
1912-	The Pas incorporated as a town.	De Lury and Cole (1930)
1913-	The Mines Act--R.S.M.C. 113, 5-1; and	De Lury and Cole (1930)
	the Mining Companies' Act--R.S.M.C. 114, 5-1, passed the Legislature.	De Lury and Cole (1930)
1913/01	Penniac Reef, first gold bar produced from 63 tonnes of ore grading approximately 17.14 g/t.	Miscellaneous 13/01/11

1914-	**Cuprus** showing discovered.	Price (1977)
1914-	Original discovery of mineralization at future **Flin Flon Mine** by David Collins.	Donaldson (1983)
1914-	**Penniac Reef**, total 270 tonnes of ore run through two stamp test mill 1913 and 1914 to produce gold bars valued at $1500 (2.3 kg) and 5.4 tonnes of concentrates at $222.00 per tonne (1.9 kg), average grade estimated at 15.43 g/t.	Star Lake Gold Mines Limited Prospectus 1915
1914-	**Herb (Wekusko) Lake** gold discovery.	De Lury and Cole (1930)
1915/09/16	**Flin Flon** showing recorded as Unique and Apex by Thos. Creighton and John Mosher, respectively.	MB Energy and Mines Mining Recording Files
1915-	**Mandy** showing discovered.	Price (1977)
1915-	**Rex** showing discovered.	Pre-Cambrian 31/10,p.15
1916-	**Mandy** property optioned to Tonopah Canadian Mines, Ltd.	Cole (1938)
1916/01	Freighting to **Mandy** started.	Cole (1938)
1916-	First diamond drill to be used in Northern Manitoba at work at the **Mandy** property.	Cole (1938)
1916-	**Rex** underground work commenced	Pre-Cambrian 31/10,p.15
1916/03	Two diamond drills commence work at **Flin Flon**.	Cole (1938)
1916-	**Mandy** in production.	Fogwill/Bamburak (1987)
1917/08	Mining plant at **Mandy**, and shaft sunk 30 m.	Cole (1938)
1917-	Shipment of 26 tonnes of gold-quartz ore from **Moosehorn claim**, Herb Lake, to Trail, B.C.	Cole (1938)

1917-	**Mandy Mine** ships copper ore to Trail, B.C.	De Lury and Cole (1930)
1917-1918-	**Maskwa River** copper-nickel claims staked.	De Lury and Cole (1930)
1919-	**Mandy Mine** ceases underground mining.	Fogwill/Bamburak (1987)
1920-	**Oiseau (Bird) River** copper-nickel deposits discovered.	De Lury and Cole (1930)
1920-	**Flin Flon** property optioned to Mining Corporation of Canada and W.B. Thompson of New York.	Cole (1938)
1920-	R.E. Phelan to **Flin Flon** to investigate direct smelting of the ore.	Cole (1938)
1920-	**Flin Flon** Nos. 1 and 2 shafts sunk.	Cole (1938)
1920-	**Mandy Mine** last shipment of copper ore to Trail, B.C.	Cole (1938)
1922-	Original discovery of mineralization at future **Sherridon Mines** by Philip Sherlett.	Brown (1933)
1922-	Two-stamp mill installed at **Elora Fractional claim**, Long Lake.	De Lury and Cole (1930)
1923-	Mining at **Onondaga** claim begun, shaft sunk and five-stamp mill installed.	De Lury and Cole (1930)
1924-	**Sherritt-Madole** property staked or acquired.	De Lury and Cole (1930)
1924-	**Rex** main shaft down to 123 m and No. 2 shaft to 37 m, production $150,000 in gold to 1925.	Pre-Cambrian 31/10,p.15
1924/05	**Central Manitoba**-Kitchener ore discovery.	Pre-Cambrian 31/10, p.8
1925/12	**Central Manitoba**-Kitchener shaft sinking begun.	Pre-Cambrian 31/10, p.8
1925-	Minerals Separation Co. & Whitney interests negotiating with Mining Corporation of Canada for **Flin Flon** property.	Cole (1938)

1925-	**Oro Grande—Solo claims** development work.	Cole (1938)
1925-	**Cryderman** property located for Mining Corporation of Canada.	Cole (1938)
1925-1926-	Gold discoveries near **Gem Lake and Slate Lake.**	De Lury and Cole (1930)
1926-	The Security Frauds Prevention Act, Cap.46, passed by Legislature.	De Lury and Cole (1930)
1926-	**Sherritt-Madole** property first drilled in winter of 1926-27.	De Lury and Cole (1930)
1926-	Victoria Syndicate option and work on **Cryderman** property.	De Lury and Cole (1930)
1927/03	**Flin Flon** pilot mill in operation.	Cole (1938)
1927-	Hydro-electric power line connects Central Manitoba area with Winnipeg River.	De Lury and Cole (1930)
1927-	The Mines Act amended.	De Lury and Cole (1930)
1927/01/15	**San Antonio** development started.	Pre-Cambrian 31/10, p.5
1927/04/14	**San Antonio** camp completed, shaft sinking begun.	Pre-Cambrian 31/10, p.5
1927-	R.J. Jowsey optioned **Sherritt Gordon (Sherritt-Madole)** property. Diamond drill to Sherritt Gordon by aeroplane.	Cole (1938)
1927/10	**Central Manitoba** mill of 136 tonne daily capacity erected and commenced operations on ore from Kitchener, Rogers and Tene 6 mines.	Central MB 2nd Ann.Rpt.
1927/11	**Eldorado** property development work.	Cole (1938)
1927/12/01	Hudson Bay Mining and Smelting Company exercised its option on the **Flin Flon Mine.**	De Lury and Cole (1930)

1928/01	Flin Flon - The Pas, 140 km railroad started, completed in October.	De Lury and Cole (1930)
1928/01/15	**San Antonio** No. 1 shaft down to 38 m level.	Precambrian 31/10 p.5
1928/02/26	**Mandy Mine** operations resumed.	Cole (1938)
1928-	Island Falls power development surveyed in aeroplane flights and construction started.	Cole (1938)
1928-	**Cryderman** property sold to Jas. Stuart and associates.	Cole (1938)
1928-	**Sherridon Mine** development work started and nos. 1 and 2 shafts sunk.	Cole (1938)
1928-	**Flin Flon** plant construction commenced.	Cole (1938)
1928-	**Oro Grande Mine** development work started.	Cole (1938)
1928/04/05	**San Antonio** No. 2 shaft down to 183 m level.	Pre-Cambrian 31/10, p.5
1928/05/09	Department of Mines and Natural Resources established by Manitoba government.	De Lury and Cole (1930)
1928/07/20	**Gem Lake Mine** shaft sinking begun.	Pre-Cambrian 31/10,p.12
1928/11/01	The Mines Act amended. Rules under the Mines Act adopted.	De Lury and Cole (1930)
1929/01	Freighting to **Sherridon Mine** from Cranberry Portage started.	Cole (1938)
1929/03	Freight Flin Flon to Island Falls, machinery and supplies completed.	Cole (1938)
1929/04/08	**Sherridon Mine** No. 3 shaft started.	Cole (1938)
1929/07/28	Sherridon Mine reached by steel.	Cole (1938)
1929-1930-	Freighting completed to Island Falls.	Cole (1938)
1930/06	**Flin Flon** equipment tested.	Cole (1938)

1930/06/01	Island Falls power plant, Saskatchewan, operated for first time.	Deir (1957)
1930/06/24	**Flin Flon** commenced ore crushing.	Cole (1938)
1930/07/15	Transfer of Natural Resources to Manitoba.	Cole (1938)
1930/07/15	"The Mines Act", chapter 27, in force.	Cole (1938)
1930/07/17	**Flin Flon**, first unit of flotation plant started.	Cole (1938)
1930/09	**Flin Flon** zinc roasters started.	Cole (1938)
1930/10	**Flin Flon** copper roasters and reverberatory furnaces started.	Cole (1938)
1930/11	**Flin Flon**, first zinc slabs and cadmium sponge produced.	Cole (1938) Precambrian 31/06, p.3
1930/12	**Flin Flon** copper production begun.	Cole (1938)
1930-	Bobjo Mines Ltd. interested in San Antonio Mines, Ltd.	Cole (1938)
1930-	Scarab Development Co. holdings taken over by San Antonio.	Cole (1938)
1930-	**Baker-Patton** property diamond drilling by Mandy Mines Ltd.	Cole (1938)
1930-	**Sherridon** mining and milling plant, Main shaft, under construction Sherritt-Gordon Mines, Ltd.	Cole (1938)
1931-	Equalization exchange premiums paid by Dominion Government to gold miners.	Deir (1957)
1931-	**Flin Flon** produces selenium.	Deir (1957, p.99)
1931-	Exports of gold bullion without licence prohibited by Dominion Government.	Deir (1957)
1931-	**Island Lake** showing discovered.	Pre-Cambrian 31/12, p.1

1931/03/10	**Sherridon Mine** ore crushing commenced.	Pre-Cambrian 31/04,p.16 31/05, p.10
1931/04/01	**Sherridon** plant in production, shipping copper concentrate to Flin Flon smelter.	Pre-Cambrian 31/04,p.16 31/05, p.10
1931/09/21	Great Britain went off the gold standard and was followed by many other countries.	Deir (1957)
1931/11	**Gem Lake** mill installed; ships first gold brick.	Dept.Ann.Rpt.(32/04/30) Precambrian 31/12 p.4
1932/02	**Gem Lake Mine** closed down; 82 tonnes of ore milled, 6.6 kg of gold and 0.6 kg of silver produced.	Dept.Ann.Rpt.(32/04/30)
1932-	**Island Lake Mine** diamond drilling.	Cole (1938)
1932-	Freighting by boats to Norway House for winter haulage to Island Lake mine.	Cole (1938)
1932/06	The United States imposed duty of 2 cents per kg on foreign copper.	Deir (1957)
1932/06	**Sherridon Mine** suspends operations.	Cole (1938)
1932/07/01	**Oro Grande** property milling commenced.	Cole (1938)
1932-	Dominion group at **Copper Lake** ships gold quartz ore to Flin Flon smelter.	Cole (1938)
1932-	**Cryderman** Company milling.	Cole (1938)
1932-	**God's Lake** gold discovery.	Cole (1938)
1932/12/29	Silver reached a record low of 24.5 cents in New York.	Deir (1957)
1933-	"Mining Tax Act", chapter 27, passed.	Cole (1938)
1933-	**Gunnar** property diamond drilling.	Cole (1938)
1933-	**Vanson Mine** produces gold.	Cole (1938)
1933-	**Grand Central** claim producing gold.	Cole (1938)

1933-	Gem Lake mines in bankruptcy. Property passes to Diana Gold Mines, Ltd.	Cole (1938)
1933/04/19	United States went off gold standard.	Deir (1957)
1933/05/01	**San Antonio** commenced milling and reached 136 tonnes a day in August.	Cole (1938)
1933/05/19	**Ferro claim** gold production.	Cole (1938)
1933-	**God's Lake Mine** development work.	Cole (1938)
1933/08	**Island Lake** mill operating.	Cole (1938)
1933-	**Oro Grande** mill increased capacity.	Cole (1938)
1934/01/31	The President of the United States issued a Proclamation reducing the gold weight of the United States dollar from 1.67 to 0.99 g (25.8 to 15 5/21 grains), 0.9 fine.	Deir (1957)
1934/03/15	San Antonio pays its first dividend, 5 cents a share.	Cole (1938)
1934/03/15	**God's Lake** mining plant erected and in operation and Main shaft sunk to 94 m.	Cole (1938)
1934-	**San Antonio Mine** sinking new Main shaft and milling increased to 154 tonnes.	Cole (1938)
1934/04/19	Dominion Tax on gold came into effect.	Deir (1957)
1934/04	**Gabrielle Mine** sinking shaft to 122 m level.	Cole (1938)
1934-	Operations at **Oro Grande Mine**, taken over by Beresford Lake Mines Ltd., production suspended.	Deir (1957)
1934-	**Gunnar Mine** development work.	Cole (1938)
1934-	R.E. Phelan, general manager, Hudson Bay Mining and Smelting Company, awarded International Nickel Co., medal.	Cole (1938)

1934-	**Island Lake Mine** producing ore.	Cole (1938)
1934-	**Gunnar Mine** shaft sinking.	Cole (1938)
1934/06	**Rex (Laguna) Mine** operations resumed.	Cole (1938)
1934/06/09	**Flin Flon** strike, operations suspended until July 9th.	Cole (1938)
1934/06/15	**Gem Lake Mine** operations resumed by Diana Gold Mines, Ltd..	Cole (1938)
1934-	Flin Flon employees Welfare Board established.	Cole (1938)
1934/08	**Gem Lake Mine** in production.	Dept.Ann.Rpt.(35/04/30)
1934/09	Wage scale of 1929 re-established at Flin Flon.	Cole (1938)
1934-	**Forty Four** property diamond drilling.	Cole (1938)
1934-	**Packsack** property diamond drilling.	Cole (1938)
1934/11	**Knee Lake** diamond drilling.	Cole (1938)
1934-	**Wingold** property development work.	Cole (1938)
1935-	Dominion Government transferred gold held against Dominion notes to Bank of Canada.	Deir (1957)
1935-	Flin Flon produces tellurium.	Deir (1957, p.100)
1935-	**Dickstone No. 1** suface showing discovered.	Price (1977)
1935-	**Johnston Knee Lake Mine** mining plant in operation.	Cole (1938)
1935/03/11	Bank of Canada commenced operations.	Deir (1957)
1935-	Silver held by Dominion Government transferred to Bank of Canada.	Deir (1957)
1935/04	United States Government's buying price of domestic silver raised to 77.57 cents.	Deir (1957)
1935/05/31	Gold bullion tax discontinued and depletion allowances revised for payments of gold mining dividends.	Deir (1957)

1935/05	**Knee Lake** mining plant in operation.	Cole (1938)
1935-	Hudson Bay Mining and Smelting Co., pays its first dividend.	Cole (1938)
1935-	**Jowsey Island** diamond drilling.	Cole (1938)
1935/06/12	**Island Lake Mine** suspends operations.	Cole (1938)
1935-	**Echimamish River** gold discovery.	Cole (1938)
1935-	**Flin Flon** Sick Benefit Club started.	Cole (1938)
1935-	**San Antonio** increases milling to 250 tonnes a day.	Cole (1938)
1935/08/29	Gurney Gold Mines, Ltd., purchases assets of Wylie-Dominion Mines, Ltd.	Cole (1938)
1935-	**Gabrielle Mine** sold to San Antonio Gold Mines, Ltd.	Cole (1938)
1935/09/07	Hydro-electric power at Kanuchuan Rapids ready for God's Lake Mine.	God's Lake Ann.Rpt.1935
1935/09/10	**God's Lake** mill in operation.	God's Lake Ann.Rpt.1935
1935-	**Gunnar** mill under construction.	Cole (1938)
1935/12/24	**Johnston Knee Lake Mine** suspended operations.	Cole (1938)
1936/01/18	**Knee Lake** mining operations suspended.	Cole (1938)
1936/03/27	Electric power at **Gold Lake Mine**.	Cole (1938)
1936/04/10	**Gold Lake Mine** shaft sinking started.	Cole (1938)
1936/04	**Packsack Mine** shaft sinking.	Cole (1938)
1936/04	**Oro Grande Mine** operations renewed.	Cole (1938)
1936/04/17	**Gunnar** mill started, full operation May 1.	Cole (1938) Deir (1957)
1936/04/19	**Gem Lake Mine** ceased production, to March 1, 1936 produced 21 800 tonnes of ore yielding 213.8 kg of gold worth $240,500.	Dept.Ann.Rpt.(36/04/30)

1936/05	Amendment to Income Tax Act exempted new producing metal mines for 3 years.	Deir (1957)
1936/08/22	**Gem Lake Mine** began operations under Consolidated Diana Gold Mines, Limited.	Dept.Ann.Rpt.(37/04/30)
1936/07	HBMS adopts apprentice plan.	Cole (1938)
1936/07/10	**Jowsey Island Mine** operations suspended.	Cole (1938)
1936/08/01	**Laguna (Rex)** mill in operation.	Cole (1938) Dept.Ann.Rpt.(37/04/30)
1936-	Cadmium metal produced for first time by Hydson Bay Mining & Smelting Company at **Flin Flon**.	Deir (1957)
1936-	Capacity of hydro-electric plant at Island Falls increased.	Cole (1938)
1936-	**San Antonio** increases milling to 295 tonnes a day.	Cole (1938)
1936-	**Callinan Flin Flon** property diamond drilling.	Cole (1938)
1936-	**Echimamish** property diamond drilling.	Cole (1938)
1936-	**Dickstone** copper discovery near Morton Lake.	Cole (1938)
1936/10	Hudson Bay Mining and Smelting Co. increases wages 5 per cent.	Cole (1938)
1937/02	**Cranberry Portage** commences mining operations by Bergold Development Co.	Cole (1938)
1937/02/08	**Gurney Mine** shaft sinking renewed, to a depth of 199 m.	Cole (1938) Dept.Ann.Rpt.(37/04/30)
1937/03/23	**Webb-Garbutt** property, Elbow Lake commences shaft sinking by Century Mining Co.	Cole (1938) Dept.Ann.Rpt.(37/04/30)
1937-	**Dickstone** property diamond drilling.	Cole (1938)

1937/04	HBMS increases wages another 5 per cent and provides for holidays with pay.	Cole (1938)
1937-	"Well Drilling Act", chapter 50 S.M., passed by Legislature.	Cole (1938) Cole (1938)
1937/05/25	**Gurney Mine** construction of milling plant begun.	Dept.Ann.Rpt.(38/04/30)
1937-	**Flin Flon Open Pit**, top 91 m of orebody removed.	HBMS Brochure 1972/06
1937/05	**Gem Lake Mine** suspends operations, 15.8 kg of gold and 187 g of silver recovered from bulk samples.	Dept.Ann.Rpt.(37/04/30) Dept.Ann.Rpt.(38/04/30)
1937/07/08	**Central Manitoba** underground operations ceased.	Central MB 10th Ann. Rpt.
1937/08/01	**Sherridon Mine** resumes operations.	Cole (1938)
1937-	**God's Lake** mill increases capacity to 181 tonnes a day.	Cole (1938)
1937-	**Laguna** mill increases capacity to 82 tonnes a day.	Cole (1938)
1937/10	**Central Manitoba** retreating of tailings and mill clean-up completed.	Central MB 11th Ann. Rpt.
1937/10/15	**Gurney Mine** came into production.	Deir (1957) Dept.Ann.Rpt.(38/04/30)
1937/11/11	**Gurney Mine**, first gold brick poured.	Dept.Ann.Rpt.(38/04/30)
1937/12/02	**Oro Grande Mine** (operated by **Beresford Lake** Mines Ltd.) resumed production, first gold poured on January 10, 1938.	Dept.Ann.Rpt.(38/04/30) Dept.Ann.Rpt.(39/04/30)
1937/12	Gunnar Gold Mines, Ltd., pays its first dividend.	Cole (1938)
1938/02	**Sunbeam Mine** began shaft sinking.	Dept.Ann.Rpt.(39/04/30)

1938/12	**Sunbeam Mine** operations suspended.	Dept.Ann.Rpt.(40/04/30)
1939-	Exports of copper, lead, zinc and various other metals and minerals prohibited without licence.	Deir (1957)
1939/06	**Oro Grande (Beresford Lake Mines Ltd.)** ended milling operations.	Dept.Ann.Rpt.(40/04/30)
1939/09/01	German army invades Poland.	Deir (1957)
1939/09/03	Germany and Great Britain at war.	Deir (1957)
1939/09/10	Canada declared war against Germany.	Deir (1957)
1939/11/22	**Gurney Mine**, suspends operations, mine closed.	Deir (1957) Dept.Ann.Rpt.(40/04/30)
1939/11/27	**Sunbeam Mine** operations resumed.	Dept.Ann.Rpt.(40/04/30)
1939-	Canadian base metals producers agree to supply the Imperial Government with copper, lead and zinc at prices prevailing shortly before the war.	Deir (1957)
1939-	Income Tax amendment afforded tax credit to mining industry as a whole.	Deir (1957)
1939/12/20	**Laguna (Rex) Mine** suspends operations.	Deir (1957) Dept.Ann.Rpt.(40/04/30)
1940/01	**Sunbeam Mine**, hauling of ore 51 km to Kenricia Gold Mine Limited, located at Clearwater Bay, Lake of the Woods, begun.	Dept.Ann.Rpt.(41/04/30)
1940/02	**Sunbeam Mine** operations suspended after 4256 tonnes mined and milled to produce 24.7 kg of gold.	Dept.Ann.Rpt.(41/04/30) Dept.Ann.Rpt.(42/04/30)
1940/02/16	**Oro Grande (Beresford Lake Mine Ltd.)** resumed production.	Dept.Ann.Rpt.(40/04/30)

1940/04/09	Canadian Government announced the formation of the Department of Munitions and Supply.	Deir (1957)
1940-	**Gem Lake** tailings dump worked over to recover 2.2 kg of gold and 218 g of silver.	Dept.Ann.Rpt.(42/04/30)
1940/07	**Century Mine (Webb-Garbutt)**, Elbow Lake, installed a century mill and produced 1.5 kg of gold from 325 tonnes milled, by January 1942.	Deir (1957) Dept.Ann.Rpt.(42/04/30)
1940/10	**Oro Grande (Beresford Lake** Mines Ltd.) discontinued production.	Dept.Ann.Rpt.(41/04/30)
1940/12	Publication of statistics relating to Canadian production of strategic metals and minerals banned.	Deir (1957)
1941-	**Gem Lake** tailings dump worked over to recover 778 g of gold and 93 g of silver.	Dept.Ann.Rpt.(42/04/30)
1941-	The Howe Sound Exploration Co. explored its **Snow Lake** property.	Deir (1957)
1941-	**Cuprus** orebody outlined by drilling.	Price (1977)
1941/04	**Flin Flon Open Pit**, surface haulage discontinued.	HBMS Ann.Rpt. 1941
1941/04	**Ogama Mine** shipped ore 14 km to the Gunnar mill.	Dept.Ann.Rpt.(42/04/30)
1942/05/08	**Gunnar Mine** closed, milling ceased on Gunnar ore.	Dept.Ann.Rpt.(43/04/30)
1942/06	**Sherritt-Gordon Mine** produced zinc concentrates.	Deir (1957)
1942-	**Mandy Mine**, plant installed, development ore stockpiled.	HBMS Ann.Rpt. 1942

1942/07/31	**Ogama Mine** ends shipping gold ore to Gunnar mill.	Dept.Ann.Rpt.(43/04/30)
1942-	Thompson (**Cuprus**) Property optioned, orebodies outlined by drilling.	HBMS Ann.Rpt. 1942
1942/12/20	**Gunnar** mill clean-up ended, mill equipment salvaged.	Dept.Ann.Rpt.(43/04/30)
1943-	**Mandy Mine** reopened by Emergency Metals Ltd., produced concentrate in April.	Deir (1957)
1943/08/26	**God's Lake Mine**, last ore hoisted, ore in area of No.1 shaft exhausted.	God's Lake Ann.Rpt.1943
1943/09	**God's Lake Mine**, during its life 475 000 tonnes of ore broken and hoisted producing $5,925,844 worth of gold.	God's Lake Ann.Rpt.1943
1944-	**Thallium** produced by HBMS	Deir (1957)
1944-	**Mandy Mine** completed mining and milling, permanent shutdown.	HBMS Ann.Rpt. 1944
1945/05/08	Victory in Europe.	Deir (1957)
1945/08/15	Japan surrendered.	Deir (1957)
1945-	Gunnar Gold sold mining plant to Ogama-Rockland.	Deir (1957)
1945-	**Cuprus** property work started.	HBMS Ann.Rpt. 1945
1946-	Ceiling price of silver was lifted.	Deir (1957)
1946-	Sherritt-Gordon found **nickel-copper** in drill core at Granville Lake.	Deir (1957)
1946-	**Nor-Acme Mine**, steel head frame erected, 4 408 800 tonnes drill indicated averaging $5.79 per tonne.	Dept.Ann.Rpt.(47/03/31)

1946-	Canadian dollar placed on par with United States dollar.	Deir (1957)
1946-	Prices of copper, lead and zinc raised while control remained.	Deir (1957)
1947/06/09	Prices of base metals, except tin, decontrolled.	Deir (1957)
1947-	Labour strike at Sherritt-Gordon mines.	Deir (1957)
1947-	**Schist Lake** deposit found by drilling surface showings along strike from Mandy, hoist house and headframe constructed, ore body outlined to 183 m.	Price (1977) HBMS Ann.Rpt. 1947
1947/12	**Nor-Acme Mine**, 5 compartment shaft completed to 287 m.	Dept.Ann.Rpt.(48/03/31)
1948/02/26	**Jeep Mine** shipped ore 16 km to San Antonio.	Dept.Ann.Rpt.(49/03/31)
1948/06/01	**Ogama-Rockland** mill operated on a regular basis.	Dept.Ann.Rpt.(49/03/31)
1948/07/01	**Ogama-Rockland** officially in production.	Dept.Ann.Rpt.(49/03/31)
1948/10	**Cuprus** in production.	HBMS Ann.Rpt. 1948
1949-	**North star** discovery by drilling surface showing, with geophysics.	HBMS Ann.Rpt. 1949
1949/06/01	**Nor-Acme Mine** completed construction of mining and milling plant, in production.	Dept.Ann.Rpt.(50/03/31)
1949-	**Schist Lake** surface plant completed.	HBMS Ann.Rpt. 1949
1950/06/21	**Jeep Mine** production ceased; 16 318 tonnes produced 432.0 kg of gold.	Dept.Ann.Rpt.(51/03/31)
1950-	**North Star** orebody proved up.	HBMS Ann.Rpt. 1950
1951-	Birch Lake-Saskatchewan found by drilling surface showing.	Price (1977) HBMS Ann.Rpt. 1951

1951/04	**Ogama-Rockland** mining and milling completed, salvage of crusher and mill equipment commenced.	Dept.Ann.Rpt.(52/03/31)
1951-	**Don Jon** found by drilling surface showing with geophysics from North Star.	Price (1977) HBMS Ann.Rpt. 1951
1951-	**North Star** construction complete, shaft sinking begun.	HBMS Ann.Rpt. 1951
1951/09/20	**Sherridon** mining and milling operation ceased.	Sherritt Ann.Rpt. 1951
1951/12	Lynn Lake from Sherridon, first house moved.	Dept.Ann.Rpt.(52/03/31)
1952-	Sherritt-Gordon decided to locate new nickel refinery at Fort Saskatchewan, Alberta.	Deir (1957)
1952-	Birch Lake-Saskatchewan shaft collaring.	HBMS Ann.Rpt. 1952
1952-	Flexar-Saskatchewan found by drilling geophysical anomaly.	Price (1977)
1952	**Don Jon** crosscutting from North Star.	HBMS Ann.Rpt. 1952
1952/04	**Lynn Lake** pilot mill in operation until late September.	Sherritt Ann.Rpt. 1953
1953-	Coronation-Saskatchewan found by drilling EM anomaly, orebodies blocked out to 183 m.	Cairns (1978) HBMS Ann.Rpt. 1953
1953-	**Sourdough Bay** shaft (Don Jon property, 1.6 km west of North Star) dewatered, exploration drifting and drilling on 84 and 122 m levels, discontinued in 1954.	HBMS Ann.Rpt. 1953
1953-	**Osborne Lake** found by drilling surface showing.	Price (1977)
1953/11/07	**Lynn Lake** mill start-up.	Sherritt Ann.Rpt. 1953
1953/11/09	Lynn Lake-Sherridon, 232 km railroad, last spike by Donald Gordon.	Sherritt Ann.Rpt. 1953

1953/11/09	**Lynn Lake** first concentrate loaded.	Sherritt Ann.Rpt. 1953
1954/01/06	**Lynn Lake** first shipment of concentrate.	Sherritt Ann.Rpt. 1954
1954-	**Osborne Lake** option exercised by HBMS, orebody blocked out.	HBMS Ann.Rpt. 1954
1954/08/06	**Cuprus** mined out and shut down.	HBMS Ann.Rpt. 1954
1954/08	**Schist Lake** in production.	HBMS Ann.Rpt. 1954
1955/01/01	**Don Jon** in production.	HBMS Ann.Rpt. 1955
1955/01/01	**North Star** in production.	HBMS Ann.Rpt. 1955
1955/02/23	**Moak Lake**, preparations for $2 million shaft sinking and underground exploration program underway.	Northern Mail 55/02/23
1955-	**Forty-Four** was officially in production.	Deir (1957)
1955-	Coronation-Saskatchewan surface plant erected.	HBMS Ann.Rpt. 1955
1956-	**Chisel Lake** found by drilling ground EM anomaly.	Price (1977) HBMS Ann.Rpt. 1956
1956-	**Ghost Lake** found by drilling ground EM anomaly.	Price (1977) HBMS Ann.Rpt. 1956
1956-	**Stall Lake** found by drilling ground EM anomaly.	Price (1977) HBMS Ann.Rpt. 1956
1956-	**Moak Lake Mine**, shaft sinking to 366 m completed.	Northern Mail 56/01/06
1956/12/05	**Thompson** $185,000,000 project announced jointly by Company and Province of Mantioba.	Inco Ann.Rpt. 1960
1957/08	Birch Lake-Saskatchewan in production.	HBMS Ann.Rpt. 1957
1957-	**Don Jon** closed.	Price (1977)
1958/03/31	**North Star** operations ended, ore minded out.	HBMS Ann.Rpt. 1958
1958-	**Stall Lake** permanent hoists installed, headframe erected.	HBMS Ann.Rpt. 1958

1958/06	**Nor-Acme Mine** operations ended.	Northern Mail 58/01/22
1958-	**Jungle Lake** deposit located containing 3 360 000 tonnes grading 1.42% Cu and 1.1% Zn.	HBMS Ann.Rpt. 1958
1958-	**Tanco Mine (Chemalloy)** spodumene stockpiled on surface.	Northern Miner 58/03/27
1959-	**Rod No. 1** found by drilling ground EM anomaly.	Price (1977)
1959-	**Tanco Mine (Chemalloy)** amblygonite shipped to Frankfurt, Germany.	Northern Miner 59/03/16
1959-	**Tanco Mine (Chemalloy)** beryllium ore shipped to U.S.A.	Northern Miner 59/03/16
1960-	**Tanco Mine (Chemalloy)** pollucite (cesium ore) shipped to U.S.A.	Northern Miner 60/01/14
1960/04/01	Coronation-Saskatchewan in production.	HBMS Ann.Rpt. 1960
1960/04/14	Birch Lake-Saskatchewan mined out and closed out.	HBMS Ann.Rpt. 1960
1960/09	Chisel Lake-Optic Lake railroad completed.	Dept.Ann.Rpt.(61/03/31)
1960/09/01	**Chisel** in production, lead produced first time.	HBMS Ann.Rpt. 1960
1960/09	**Thompson** smelter in operation.	Dept.Ann.Rpt.(61/03/31)
1961/02/20	**Fox Mine** mineralization discovered.	Sherritt Ann.Rpt. 1970
1961/03/25	**Thompson** plant official opening.	Inco Ann.Rpt. 1961
1961-	**Osborne Lake** headframe erected.	HBMS Ann.Rpt. 1961
1962-	**Rod No. 1** in production.	Price (1977)
1962-	Coronation-Saskatchewan worked out?	HBMS Ann.Rpt. 1962
1962-	**Wim** deposit found by drilling EM anomaly.	Cairns (1978)
1962-	**Tanco Mine (Chemalloy)** allowed to flood.	CIM Bulletin Feb. 1979

1962-	**Osborne Lake** surface plant completed.	HBMS Ann.Rpt. 1962
1963-	**White Lake** found by drilling EM anomaly.	Cairns (1978)
1963-	**Stall Lake Mine** construction completed.	HBMS Ann.Rpt. 1963
1963-	**Birchtree** deposit discovered.	Inco Ann.Rpt. 1964
1963-	Flexar-Saskatchewan surface plant construction began.	HBMS Ann.Rpt. 1963
1963-	**Anderson Lake** found by drilling ground EM anomaly.	Price (1977)
1963-	**Manibridge** orebody discovered by diamond drilling.	CIM Bulletin March 1974
1964-	**Anderson Lake** orebody blocked out, minesite cleared and shaft collared.	HBMS Ann.Rpt. 1964
1964-	**Rod No. 1** closed.	Price (1977)
1964-	Cuprus Mine concentrator building dismantled, steel reclaimed for Anderson Lake mine buildings.	HBMS Ann.Rpt. 1964
1964-	Coronation-Saskatchewan closed.	Price (1977)
1964/02	**Stall** in production.	HBMS Ann.Rpt. 1964
1964-	Flexar-Saskatchewan plant utilities completed.	HBMS Ann.Rpt. 1964
1964-	**Birchtree** being developed.	Inco Ann.Rpt. 1964
1965-	**Birchtree** scheduled for production in 1967.	Inco Ann.Rpt. 1965
1965-	**Anderson Lake Mine** surface buildings, except hoist, completed.	HBMS Ann.Rpt. 1965
1965-	**Rod No. 2** found by drilling ground EM anomaly.	Price (1977)
1965-	**Osborne Lake** second headframe and hoisthouse completed.	HBMS Ann.Rpt. 1965
1965-	**Soab** being developed, scheduled for production in 1967.	Inco Ann.Rpt. 1965

1965/11	Flexar-Saskatchewan shaft sinking commenced.	HBMS Ann.Rpt. 1965
1966-	**Pipe Mine** project $100,000,000 announced, scheduled for production, late 1969.	Inco Ann.Rpt. 1966
1966-	**Ghost Lake Mine** headframe fabricated and painted.	HBMS Ann.Rpt. 1966
1966-	**Dickstone No. 2** found by drilling ground EM anomaly, options exercised in November.	Price (1977) HBMS Ann.Rpt. 1966
1966-	**Anderson Lake** hoisting equipment installed and surface plant complted.	HBMS Ann.Rpt. 1966
1967-	Osborne Lake Mine-Stall Lake Mine railroad completed.	HBMS Ann.Rpt. 1967
1967-	**Dickstone No.1** shaft collared.	HBMS Ann.Rpt. 1967
1967-	**Rail Lake** mineralized zone discovered containing 295 000 tonnes averaging 3% Cu.	HBMS Ann.Rpt. 1967
1968-	Pipe Lake-Thompson, 77 km railroad completed.	Inco Ann.Rpt. 1968
1968-	**San Antonio Mine** closed down.	Dept.Ann.Rpt.(69/03/31)
1968-	**Dumbarton** decline being advanced and surface plant under construction at a cost of $2,400,000.	Con.Can.Faraday Ann. Rpt. 1968
1968/07/02	**Osborne** in production.	HBMS Ann.Rpt. 1968
1969-	**Reed Lake** mineralized zone discovered.	HBMS Ann.Rpt. 1969
1969-	**Birchtree** in production.	Inco Ann.Rpt. 1968
1969-	**Centennial** mineralized zone discovered.	HBMS Ann.Rpt. 1969
1969/03	**Ruttan Lake** copper-zinc deposit discovered, located by airborne survey in spring of 1968 and staked in August 1968.	Sherritt Ann.Rpt. 1969
1969/04/01	Flexar-Saskatchewan in production.	HBMS Ann.Rpt. 1969
1969/09/27	**Dumbarton Mine** officially opened.	Con.Can.Faraday Ann.Rpt. 1969

1969/10/01	**Dumbarton** in production, mill feed to Werner Lake, concentrates to Falconbridge Nickel Mines in Sudbury.	Con.Can.Faraday Ann.Rpt. 1969
1969-	**Dickstone No.1** shaft completed and **No.2** started.	HBMS Ann.Rpt. 1969
1969-	**Pipe No. 1 and Pipe No. 2 Open Pit** being developed, scheduled for production, 1971.	Dept.Ann.Rpt.(70/03/31)
1970-	**Soab North Mine** in production.	Dept.Ann.Rpt.(71/03/31)
1970-	**Soab South Mine** production shaft completed, lateral development underway, production anticipated in 1971.	Dept.Ann.Rpt.(70/03/31) Dept.Ann.Rpt.(71/03/31)
1970-	**Centennial** found by drilling EM anomaly, 1.27 million tonnes grading 2.06% Cu, 2.6% Zn.	Cairns (1978) HBMS Ann.Rpt. 1970
1970-	**Reed Lake** orebody discovered, 714 000 tonnes at 2% Cu.	HBMS Ann.Rpt. 1970
1970/05	**Fox Mine** construction complete.	Sherritt Ann.Rpt. 1970
1970/09/24	**Fox Mine** official opening.	Sherritt Ann.Rpt. 1970
1970/10/01	**Fox Mine** officially in production.	Sherritt Ann.Rpt. 1970
1970/11/02	**Dickstone Mine**, first ore arrived at Flin Flon.	HBMS Brochure 1972/06
1970/11/09	**Anderson Lake Mine**, first ore arrived at Flin Flon.	HBMS Brochure 1972/06
1970/11	**Stall Lake Mine** temporarily halted production for internal shaft sinking from 869 to 1097 m level.	HBMS Ann.Rpt. 1970
1971/01/27	HBMS mining and metallurgical operations shut down by strike.	HBMS Ann.Rpt. 1971

1971-	**Pipe No. 1 and Pipe No. 2 Open Pit**, limited production.	M.I. 63-O/8 NI3
1971/02	**White Lake** mine shaft collared	HBMS Ann.Rpt. 1971
1971-	**Reed Lake** reserves increased to 1 036 000 tonnes averaging 2.18% Cu.	HBMS Ann.Rpt. 1971
1971/04	**Soab North and South** on standby.	Inco Ann.Rpt. 1971 Dept.Ann.Rpt.(72/03/31)
1971/04	**Pipe No. 1** on standby.	Inco Ann.Rpt. 1971
1971-	**Batty Lake** copper zone discovered.	HBMS Ann.Rpt. 1971
1971/06/03	**Manibridge** milling operations commenced.	CIM Bulletin March 1974
1971/06/21	HBMS strike ended.	HBMS Ann.Rpt. 1971
1971/07/23	**Manibridge** first concentrates shipped.	Northern Miner 71/09/09
1971/09/02	**Manibridge Mine** officially in production.	Northern Miner 71/09/09 Dept.Ann.Rpt.(72/03/31)
1972-	**Mandy Mine** exploration at depth from Schist Lake mine, only small ore zone found.	HBMS Ann.Rpt. 1972
1972-	**Stall Lake Mine** internal shaft completed.	HBMS Ann.Rpt. 1972
1972-	**Vamp Lake** work commitments fulfilled by HBMS and Hudvam Mines Ltd.	HBMS Ann.Rpt. 1972
1972-	**Barrington Lake** copper zone discovered during EM anomaly drilling, 363 900 tonnes grading 1.5% Cu, 1.7% Zn, 4.11 g/t Au, 14.74 g/t Ag.	HBMS Ann.Rpt. 1972
1972/06/15	**White Lake** in production.	HBMS Ann.Rpt. 1972
1972/08	**Ghost** in production.	HBMS Ann.Rpt. 1972
1972-	Flexar-Saskatchewan closed.	Price (1977)
1973-	**Westarm** found by drilling EM anomaly, 644 000 tonnes averaging 4.63% Cu.	HBMS Ann.Rpt. 1973

1973-	**Pipe No. 2** shaft completed to 945 m.	M.I. 63-O/8 NI3
1973/03	**Osborne Lake Mine** production reduced to deepen No.2 shaft.	HBMS Ann.Rpt. 1973
1973/04/21	**Ruttan** first concentrate shipped.	Sherritt Ann.Rpt. 1973
1973-	**Stall Lake Mine** back in full production.	HBMS Ann.Rpt. 1973
1973/07/01	**Ruttan** officially in production.	Sherritt Ann.Rpt. 1973
1973/07	**Centennial Mine** development started.	HBMS Ann.Rpt. 1973
1974-	**Lost Lake** zone found by drilling based on geological projection, two small lenses outlined totalling 224 300 tonnes.	Cairns (1978) HBMS Ann.Rpt. 1973
1974-	**Reed Lake** reserves increased to 1 360 000 tonnes grading 2.09% Cu (diluted 10%).	HBMS Ann.Rpt. 1974
1974/11	Flin Flon plant, new 251 m stack completed and connected to flue system.	HBMS Ann.Rpt. 1974
1974/12	**Dumbarton** closed.	Con.Can.Faraday Ann.Rpt. 1974
1974-	**Maskwa Open Pit** producing.	Con.Can.Faraday Ann.Rpt. 1974
1975-	**Dickstone** closed.	Price (1977)
1975/01/08	**Centennial Mine** shaft sinking begun, access decline completed.	HBMS Ann.Rpt. 1974
1975/06	**Maskwa Open Pit** operations terminated.	Con.Can.Faraday Ann.Rpt. 1975
1975/06/01	**Westarm Mine** shaft sinking started.	HBMS Ann.Rpt. 1975
1975/08	**Dickstone** shut down because of low metal prices.	HBMS Ann.Rpt. 1975
1976/03	**Schist Lake** exhausted, permanently closed.	HBMS Ann.Rpt. 1975
1976/06	**Lynn Lake** closed.	Sherritt Ann.Rpt. 1976

1976/08	**White Lake** interrupted production for shaft deepening.	HBMS Ann.Rpt. 1976
1977-	**Westarm Mine** shaft completed at 580 m.	HBMS Ann.Rpt. 1977
1977-	Sylvia mineralized zone discovered 900 000 tonnes at 2.4% Cu, 0.8% Zn.	HBMS Ann.Rpt. 1977
1977-	**Lost Lake** zone being developed.	HBMS Ann.Rpt. 1977
1977/04	**Manibridge** closed.	Wpg.Free Press 76/11/22
1977/06/30	**Centennial** in production.	HBMS Ann.Rpt. 1977
1977/06/30	Snow Lake mill and concentrator, $26 million, approved by HBMS Board of Directors.	HBMS Ann.Rpt. 1977
1977/07	**Pipe No. 2** underground development work suspended.	Inco Ann.Rpt. 1977
1977/07/04	Snow Lake, 3450 tonne concentrator construction begun.	HBMS Ann.Rpt. 1977
1977/12	**Birchtree** production suspended.	Inco Ann.Rpt. 1977
1978/01/03	**Westarm** in production.	HBMS Ann.Rpt. 1977
1978/02	**Anderson Lake** shut down to deepen shaft by 132 m.	HBMS Ann.Rpt. 1977
1978-	**White Lake** resumed operations.	HBMS Ann.Rpt. 1978
1978-	**Lost Lake** in production.	HBMS Brochure 1981/08
1978-	**Spruce Point** deposit purchased by HMBS, 450 000 tonnes grading 2.8% Cu, 4.5% Zn.	HBMS Ann.Rpt. 1978
1978/08	**Spruce Point Mine** construction started.	HBMS Ann.Rpt. 1978
1978-	Ghost Lake to Chisel 198 m level haulage completed.	HBMS Ann.Rpt. 1978
1979-	**Rod Mine** deposit letter of intent to lease signed by HBMS.	HBMS Ann.Rpt. 1979

1979-	**Spruce Point** shaft collaring completed.	HBMS Ann.Rpt. 1979
1979/04/26	**Snow Lake** concentrator, $33 million, completed, first ore treated.	HBMS Ann.Rpt. 1979
1979/06/28	Snow Lake concentrator officially opened.	HBMS Ann.Rpt. 1979
1979/11	**Centennial Mine** shut down by bulkhead failure.	HBMS Ann.Rpt. 1979
1979/11	**Trout Lake** joint venture agreement signed by HBMS, Granges, M.M.R. to develop orebodies.	HBMS Ann.Rpt. 1980
1980/03	**Centennial Mine** resumed production.	HBMS Ann.Rpt. 1980
1980/04	**Spruce Point** shaft sinking begun.	HBMS Ann.Rpt. 1980
1980-	**Nor-Acme** two-year option agreement signed by HBMS for deep drilling and mining.	HBMS Ann.Rpt. 1980
1980/12/04	**Ruttan Open Pit Mine**, last truckload of ore discharged into primary crusher.	Sherritt Ann.Rpt. 1980
1981/07	**Spruce Point** shaft sinking completed.	HBMS Ann.Rpt. 1981
1981/07	**Rod Mine** shaft sinking commenced.	HBMS Ann.Rpt. 1981
1981-	**Pine Bay** three-year option agreement signed by HBMS for drilling.	HBMS Ann.Rpt. 1981
1982/01	**San Antonio Mine**, commercial production at the mill commenced.	Dept.Ann.Rpt.(82/03/31)
1982-	**Trout Lake** in production.	HBMS Ann.Rpt. 1982
1982-	**Spruce Point** in production.	HBMS Ann.Rpt. 1982
1982-	**White Lake** closed due to ore depletion.	HBMS Ann.Rpt. 1982
1982-	**Lotus Mine** in production.	Dept.Ann.Rpt.(83/03/31)
1982-	**Nor-Acme** option to purchase by HBMS exercised.	HBMS Ann.Rpt. 1982
1982-	Island Falls power plant sold by HBMS for $55.5 million.	HBMS Ann.Rpt. 1982

1982/08	**Lotus Mine** operations terminated because estimates of pre-development ore reserves not met.	Dept.Ann.Rpt.(83/03/31)
1982-	**Osborne Lake Mine** ceased production.	HBMS Ann.Rpt. 1982
1983-	**Centennial** operations suspended.	HBMS Ann.Rpt. 1983
1983/05/27	**San Antonio Mine** suspended production.	Dept.Ann.Rpt.(84/03/31) C.M.J. 84/02
1984-	**Osborne Lake Mine** permanently closed.	HBMS Ann.Rpt. 1984
1984/03	**Rod Mine** in production.	HBMS Ann.Rpt. 1984
1984/04	**Namew Lake** discovery hole ddh RES-13.	Pickell (1987)
1984/10	**Pipe No. 2 Open Pit** reached economic depth and production ceased.	Dept.Ann.Rpt.(85/03/31)
1985/03	**Westarm Mine** production halted, pending shaft deepening.	HBMS Ann.Rpt. 1985
1985-	**Pipe No. 2 Open Pit** stockpiled ore processed.	C.M.J. 86/02
1985-	**Namew Lake** exploratory shaft sinking begun.	HBMS Ann.Rpt. 1985
1985/04	**Centennial** resumed production.	HBMS Ann.Rpt. 1985
1985/09	**Farley Lake** discovery.	MMR News Rel.86/02/24
1985/11/28	**Fox Mine** closed due to exhaustion of reserves.	C.M.J. 86/02
1985/12	**Thompson Open Pit Mine** pre-production ore hauled at rate of 900 tonnes per day.	Inco Ann. Rpt. 1985
1986/09/23	**Thompson Open Pit Mine** officially in production, on schedule, exceeded expectations as one fo Inco's lowest cost nickel mines.	C.M.J. 84/02 Inco Ann. Rpt. 1986
1987-	**Trout Lake** $18 million shaft development project started.	HBMS Ann.Rpt. 1987
1987/01/01	**MacLellan Mine** commenced commercial production.	Sherritt Ann.Rpt. 1986

1987/03	**Namew Lake Mine** 40% interest purchased from HBMS by Outokumpu Mines Ltd.	HBMS Ann.Rpt. 1987
1987/06/29	Thompson complex closed until 1987/08/02	C.M.J. 88/03
1987/03/01	**Tartan Mine** commenced commercial operations.	Granges Ann.Rpt. 1987
1987/07	**MacLellan**, mill started processing ore, first gold brick poured mid-August.	Sherritt Ann.Rpt. 1986
1987/07	**Ruttan Mine** acquired from Sherritt Gordon Mines Limited by HBMS.	HBMS Ann.Rpt. 1987
1987/12	**Puffy Lake Mine** start-up.	C.M.J. 88/03
1988-	**Thompson Open Pit South** being developed for production by 1990, when existing Thompson Open Pit North is depleted.	Inco Ann. Rpt. 1988
1988/05	**Ghost Lake** closed, ore depleted.	Dept.Ann.Rpt.(89/03/31)
1988-	**Callinan** property development began.	HBMS Ann.Rpt. 1988
1988-	**Ruttan Mine** three-month strike began.	HBMS Ann.Rpt. 1988
1988/06	**Anderson Lake** closed, ore depleted.	Dept.Ann.Rpt.(89/03/31)
1988/06	**Centennial** permanently shut-down.	C.M.H. 88/89, p.251
1988/06/01	**Ruttan Mine** closed by strike until 1988/09/08.	C.M.J. 89/03
1988/11/15	**Namew Mine** officially opened at a cost of $70 million.	Wpg.Free Press 88/11/16
1989/02	**Chisel Lake** Open Pit in production.	HBMS Ann.Rpt. 1988
1989/03/06	Chisel Lake (Snow Lake)-Optic Lake railroad dismantling 41 miles begun.	Reminder 89/03/06
1989/05/07	**Birchtree Mine** production resumed.	ThompsonCitizen89/05/19
1989/07/23	**Puffy Lake Mine** reported destroyed by fire, only partial damage.	Wpg.Free Press 89/07/24
1989/10/17	**Tartan Mine** operations indefinitely suspended.	Wpg.Free Press 89/10/19
1989/10/23	**Puffy Lake Mine** managers seeking joint venture partners.	Northern Miner 89/10/23

1989/11/06	**MacLellan Mine** closed, milling to continue for about a month.	Northern Miner 89/11/06 89/11/20
1990/04	**Callinan Mines** commenced production	HBMS 1st 1/4 Rpt. 1990
1990/06	**Trout Lake Mine** shaft commissioned to 640 m.	Northern Miner 90/06/18
1990/10/29	**Thompson and Birchtree** mines $287 million expansion announced by Inco Ltd.	Wpg.Free Press 90/10/30

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